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Issues in Retail Centre Definition

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Abstract

Retailing is undoubtedly one of the most important sectors of the UK economy. The retail industry employs over 2.7 million people, equivalent to 1 in 9 (11%) of total UK employment, and UK retailing sales were approximately £234 billion in 2002. Despite this, we have not had a national census of retailing distribution published for nearly 30 years. Furthermore, we have little or no comprehensive method for describing the areas within towns that are retailing centres, either in terms of a generally accepted perception or a technical definition

This work will seek to investigate this problem and attempt to provide some explanation for why this may be and in the final chapter provide some suggestions as to how they may be remedied.

The work as a whole is split into two parts; firstly, a "knowledge base" composed of a literature review and the results of a series of interviews conducted with retailing professionals Secondly, an "investigation and analysis" section, which is composed of some geometric analysis and a series of field visits to retail centres to investigate first hand the incongruities of boundary definition.

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Chapter One: Introduction

1.1 Overview

Retailing in the United Kingdom is big business. There are over 188,000 VAT-registered retailing businesses in the UK operating in more than 322,000 retailing outlets. UK retailing sales were approximately £234 billion in 2002 and retailing accounted for 7% of Value Added products in 2001. Almost half of consumer spending goes through shops and the retailing industry employs over 2.7 million people (correct in March 2003). This equates to 1 in 9 (or roughly 11%) of the total UK workforce. However, the sector is still a growth industry - in the five years to 2003, employment in retailing grew by over 190,607 (Oxford Institute of Retail Management, 2004, p14).

It is clear that retailing is an ever present and vibrant part of our economy and society (Bromley and Thomas, 1993). Furthermore, there is increasing variety and freedom for customers. Consumers today can take advantage of the internet to buy or trade goods with anyone, in any location at any time. This freedom has given the consumer far more choice and power than has ever been experienced before and as a result, the consumer/retailer relationship has changed in recent years beyond all recognition (Gardner and Sheppard, 1989), albeit with new risks. However, changes to retailing have not been confined to the virtual marketplace. A greater understanding of consumer types has lead to the tailoring of stores and the creation of suites of store-types, which means that the physical location, and also the manner in which retailing is practiced has also changed considerably (Fernie, 1997).

The best recent example of this is the advent of Tesco Metro and Sainsbury's Local stores, although it could also be argued that these smaller shops represent a return to smaller, more locally based grocery shopping. Tesco is set to become the biggest convenience store (the sector colloquially known as "corner shop"), overtaking retailers such as Spar and Co-op which have traditionally dominated in

this area (Winning, 2005).

Changes in planning regulations, in particular Planning Policy Guidance note PPG6: Town Centres and Retail Development (Department of the Environment, 1996) have lead to retailers becoming more careful about store location. It has not been the case for a long time that a retailer can choose the optimum site and simply start building there, so growth has had to take place within the context of planning regulations (Adam, 2003). However, recent changes aimed at limiting out-of-town growth have resulted in more care having to be taken over the choice of locating a new outlet (Howard and Davies, 1993).

It is also clear that the retailing environment is volatile and complex. Retailing has changed a great deal over recent years and the tools and skills required of the successful retailer are changing just as rapidly. The consumer base itself has become more aware, more sophisticated, more knowledgeable and less forgiving (Poyner 1987, Palmer & Beddal 1997). In recent years heavyweight retailing institutions have made mistakes concerning the perceived needs or desires of their customers and have paid a heavy price. Others have developed strategies either to deal with a changing consumer base, or to change the nature of the business to influence consumers' desires.

The advent of "e-tailing", (the selling of retail goods on the internet) along with retailers changing their distribution strategy and moving to new locations (in unconventional outlets such as airports) have also brought an international dimension to shopping behaviour with new competitive pressures upon the retailing sector. Access to retailing opportunities remains pivotal to the quality of life of individual households, and thus the spatial dynamics of retailing organisation is a matter of some considerable importance, not only for the companies concerned but also for the spatial structure of society as a whole. This is because high streets and town centres retain an important role in civic life, and indeed account for considerable infrastructure spending and planning. This role

within wider society has led to the health of the high street being an emotive social issue, as well as an economic one.

Taking as read that the retailing sector is an important part of the British economy, this work seeks to address one of the tools used to monitor and serve the retailing sector; that of retail centre delimitation. Put simply, in order to collect information about, apply rules to, or direct funding towards a retailing centre, one must know the extent of that centre. The size of a centre (a product of the delimitation technique used) will affect any advantage that a centre may receive, so it is important to get it right.

This work will assess the two main techniques currently used to delimit retailing centres, building upon a knowledge base established through a literature review and a series of interviews.

1.2 Scope of work

In this work a retail centre can be thought of as a local concentration of retailing stores, encompassing both multiple and independent stores. In many ways "retail centres" and "town centres" are the same thing: certainly in this research many centres visited could be described as either in that they both contain shops, offices and civic buildings, as opposed to heavy industry, warehousing or manufacturing. However, to avoid confusion, this work will refer to "retail centres" throughout, on the understanding that this refers to both.

Delimitation is an important tool in the planning and governance of retail centres. Without good delimitation there is the risk of elements of error in collected statistics, which are important to understanding economic variables at a range of scales. To paraphrase the DETR (1998 p7), there is widespread interest in monitoring the health and viability of retail centres, and in being able to compare them.

Definition of retail centres is also an important issue, which impacts on many delimitation techniques. Relying often on the activity within a given area (or the density of certain activities), it follows that different definitions are likely to produce different areal results. However, it is worth noting that this work will only discuss the definition of retail centres in order to highlight issues concerning delimitation, which is the main focus of the work. Whilst the issue of defining what a retail centre *is* or should be is one of interest it does not fall within the scope of this work. Furthermore, this work will not cover the manner in which market forces or economy will impact upon the vibrancy of retail centres, other than to clarify points about delimitation.

The core of this research is thus an investigation into how different delimitation methods place the boundary of retailing activity in different places, and within a wider discussion, how retailers view and understand the spatiality of retailing activity.

1.3 Motivation

The motivation for carrying out this research is that it is accepted that retailing is important to the nation (see section 1.1) and that we need consistent statistical collection, which at present is provided only by the Town Centres Project, although Goad is used widely within the industry, as it contains more detail at the shop unit level. However, it is accepted that within any geographical information system there will be uncertainty (Openshaw, 1989: 263) and it is likely that both techniques will be liable to an element of such error. If we accept that delimitation is crucial to understanding the spatiality of retailing and that understanding retailing is desirable, yet prone to error, then it follows that some kind of assessment of the current state of delimitation must take place.

In addition, there appears to be a gulf between the academic view of retailing activity and the view held by the retailing profession. The reason for this is self evident: academics do not actually work in the field, have limited access to real world data and face little risk. Retailing professionals do not contribute to the

literature because they are perhaps reluctant to give away any advantage or intelligence concerning their practices. It may also be the case that the retailing profession does not consider academic publication or research worthy of consideration, as it is conducted within the bubble of academia, away from the pressure and risks of real retailing activity. It can be seen then that there is a knowledge gap between the two parties, and part of the motivation for this work is to create a level of dialogue between academia and industry in order to understand the retail environment better.

In conclusion, and drawing upon the final paragraph of section 1.2, this work will seek to assess the two major delimitation techniques, with the motivation that the act of delimitation is crucial to understanding and managing retail centres in England and Wales to best effect.

1.4 Hypotheses

The hypotheses of this work are threefold:

Hypothesis One: There is a significant difference between the perceptual organisation of space in the minds of retailers compared with that in academic literature.

Hypothesis Two: There are gaps in both the Town Centres Project and Goad plans of retail centres

Hypothesis Three: That by visiting the boundaries of both Town Centres Project and Goad boundaries, these flaws could be identified.

1.5 Aims and objectives of the work, contribution and justification

The objectives of this work can be described as follows:

i. To create a knowledge base about the spatial organisation of retailing
ii. To investigate the differences between the borders created for retail centres by the two delimitation techniques.

These can be translated into three principal aims. Namely:

i. To conduct a series of interviews with retailing professionals that significantly cover the range of different kinds of retailing and research, and then to write a literature review in order to present the perceptions of academia and industry in terms of the spatial organisation of retailing.

ii. To perform GIS and geometric analysis on the borders created by the two techniques to determine what differences exist.

iii. To visit a selection of retail centres to observe the boundaries on the ground and determine why any differences exist.

1.6 Outline of thesis

This thesis is structured as shown in Figure 1.1 with each of the smaller ovals being a component of the work.

The interviews with retailers served to create a complete knowledge base of how retail is organised spatially, in conjunction with the literature on the subject. This provided a more holistic knowledge base from which to perform the field work. This has also been beneficial in that it has provided a combination of qualitative

(fieldwork) and quantitative (GIS) investigation, as well as incorporating both the top down, deductive (GIS) and bottom-up inductive (fieldwork) approaches to research.

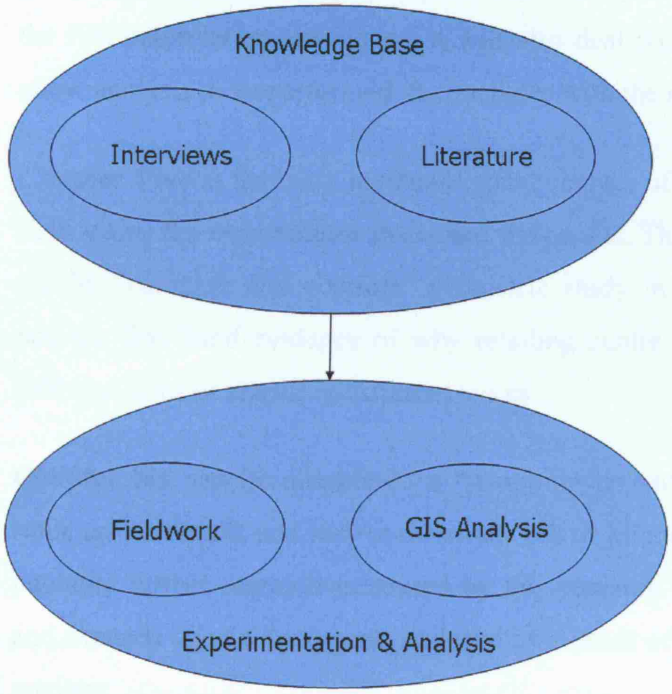

Figure 1.1: A conceptualisation of the structure of this thesis

Chapter One sets the context for this research. It deals with the problems created by a spatial information gap in the retailing sector.

Chapter Two sets the scene with respect to spatial issues in retailing. There is a brief discussion of location theory and theories of economic interaction in space. The intention is to provide a theoretical and contextual basis for this research. The chapter describes traditional approaches to the problem of understanding and quantifying the spatiality of supply and demand. These approaches are important for reference and a necessary first step in order to understand the context of the current work. The last section of this chapter gives the technical specification and the methods used to create each data set used in this research.

Chapter Three describes the methodology and results of a series of interviews with key retailers. The methodology and selection criteria are discussed at length, along with the process of creating an interview proforma. The results are then tabulated with responses in key areas, organised by each retailer.

Chapter Four concerns the computer-based analysis of the boundaries created by the two delimitation techniques. It will also deal with the preparation of data to allow analysis to be performed. It concludes with the results of this analysis.

Chapter Five is the main methodological chapter of this work and describes the field visits, the observations made and the results. The field visits act as a control on the "compare and contrast" geometric study in Chapter Four, in that they provide first hand evidence of why retailing centre boundaries can be found in different sizes or shapes in different towns.

Chapter Six can be considered a "wrapping up" of the research. This chapter sums up the results and further questions raised by the research. It also highlights potential further research prompted by this research. In particular it draws from and expands upon a document produced as a result of the interviews with leading retailers.

Chapter Two: Interactions of capital and space in the retailing sector

This Chapter forms the first half of the knowledge base for this work (as described on page 7 of Chapter One) with the following chapter, (describing retailer interviews) making up the second half. This chapter concerns the basic terms and concepts of the geography and spatiality of retailing in the UK. It discusses the nature of the retailing environment, along with the classic theories of retailing in space, in terms of both supply and demand, and other issues impacting on the spatiality and modelling of British retailing

2.1 Retailing

2.1.1 The strength and position of the retailing industry at present

As discussed in the introduction, the retailing industry accounts for a large part of the British economy. By the term "retailing" it is understood that this research is referring to the final link in the chain whereby goods and consumables are transferred at point of sale to consumer (William-Olsson 1940). It is widely regarded as being a crucial factor in the evolution and nature of our urban centres, and is considered an integral part of the entire population's everyday existence. It is inherently spatial (Wrigley et al., 2002).

Large multiples (i.e. chains rather than single outlets) dominate the market, accounting for less than 1% of the number of businesses, but over 50% of the turnover and just under half of the employment.

However, whilst it can be seen that retailing in Britain is immensely important to the national economy, it is less than adequately served in terms of government statistics. The Office of National Statistics (ONS) provides data from the retailing sales survey, but this has been subject to some criticism recently. This criticism has been directed at the ONS classification of retailing and retailing sales and specifically that the ONS has failed to pick up online buying. This argument is supported by an independent survey commissioned by the Interactive Media in

Retailing Group, which suggests that the rise in retailing is far higher than the Government's statistics (IMRG 2003).

2.1.2 The change over the last 20 years in retailing

At the end of the Second World War the state of Britain's retailing and service industry was massively different to the present day. The Censuses of Distribution 1951 to 1971 highlight the change over that period.

Table 2.1 shows the number of all retailing shops (i.e. both those that are independents and multiples) in Greater London broken down into 6 sector bands plus the total for the three last years of the Census of Distribution . The bands are an aggregation of the figures for all types of stores that are a part of that sector. For example, what is described as "Clothing" is an aggregation of several clothing store categories – menswear, ladies wear, children's clothing stores, leather goods and sports shops and milliners.

Trade sector	1951	1961	1971
Total retail	76,284	73,781	67,117
Fishmongers, poulterers	1,914	1262	705
Clothing	13,669	12,875	12,825
Grocery	12,486	11,406	8,904
Confectionary, Tobacco & News (CTN)	11,804	10,767	8,824
Butchers	4,290	4,443	3,911
Dairymen	1,592	700	376

Table 2.1: Extracts from the Censuses of Distribution 1951 – 1971, showing the falling numbers of traditional high street retailers.

For this analysis turnover was ignored as the changes of inflation and relative value in real terms over the period was prohibitively difficult, which does add a level of uncertainty in the graph versions of this table (Graph 2.1). However, as can be seen (Graphs 2.1 and 2.2), there is a strong declining trend over the post-war years and it is clear that the number and diversity of all shops in the high street was falling over this period.

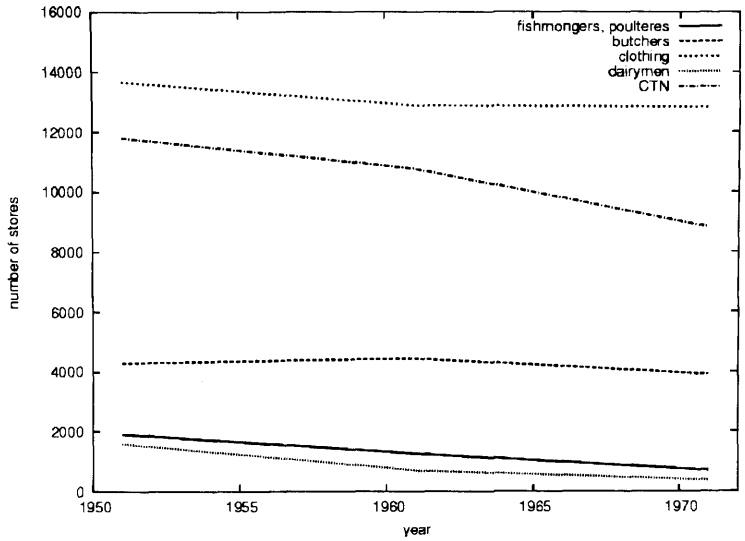

Chart 2.1: Decline in High Street diversity 1951 – 1971. Without exception the numbers of "traditional" retailers fall over the 20 year period after WWII

As supermarkets became a more usual and common part of the high street landscape, they began to provide the grocery, fishmongery and general goods services that had for so long been the preserve of the high street retailer, resulting in the decline in numbers of stores (CB Hillier Parker, 1998). Davies and Bennison (1979) state that there were three stages in the development of the modern shopping centre.

Firstly there was the creation of precinct developments in cities heavily damaged during the Second World War. These precincts followed in many ways the urban structure first seen in the expansion (sprawl) of suburbs which followed the railways, and created new suburbs in the late 19th century. The expansion around London – the creation of satellite commuter towns, like Surbiton, and the 'ideal' urban villages (the garden suburbs) consequently brought with them changes in retailing.

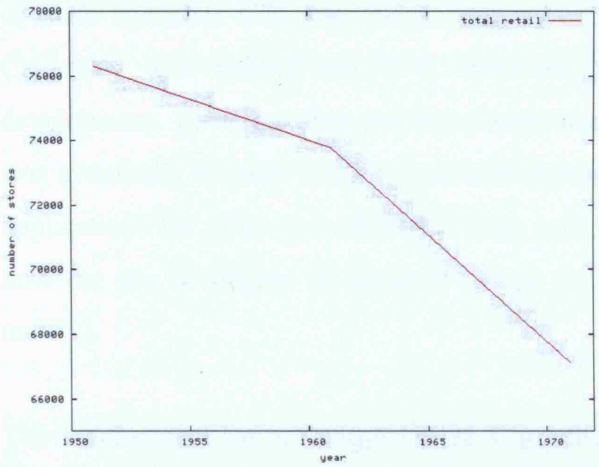

Chart 2.2: Decline in High Street retailing 1951 – 1971 (Total Retail)

The second stage was the creation of bespoke shopping areas built in new towns. These were modelled on what could be considered the "traditional" English model of the Victorian era – that of the expansion of the city on to suburban areas. The difference between this and the first stage is that these were shopping centres that were in some way zoned and designated conceptually, along with the city, as opposed to centres that (although encapsulated) have been created as a secondary development in an already existing town.

Figure 2.1: The progression of the Bullring centre, Birmingham (from left to right) artists impression 1960, view of the rotunda 1971, the Bullring market in the 1980s and the recent refurbishments 2004.

The third stage and one which is most pertinent here, is that of the shopping centre. A good example is the Bull Ring Centre in Birmingham (see Figure 2.1), closely followed by the development of the first out-of town hypermarkets (see definition later), such as the Carrefour in Minworth, Warwickshire. The most famous of these developments was the Cribbs Causeway hypermarket in Bristol, brought into the limelight during the early 1970s and 1980s. The story here is that several planning applications were submitted throughout the 1970s for retailing and office development. The applications were consistently sent to the Secretary

of State and after a lengthy public enquiry all planning permission for Cribbs Causeway was refused in 1974. However, this was not the end of the development. Carrefour then put in an application to build a hypermarket which was eventually allowed (after refusal and appeal). Then, during the 1980s, other applications for other and additional uses were put in and were successful and now the site is roughly 90 hectares in size (having started off as 8,000 square metres).

The development has not stopped there. Currently the site houses a 12 screen cinema complex and large retailing shopping centre. The Cribbs Causeway Development has been cited by many conservationists as an example of "thin end of the wedge" development, in which one small development escalates into larger complexes (Larkham, 1992). In the Keynote Report on Supermarkets and Superstores, 2001 the following definitions (Table 2.2) were given for the correct terminology for supermarkets, hypermarkets and superstores.

Supermarket	A self-service grocery store that sells food, beverages and other goods. It is usually located on urban high streets or in shopping malls, covering an area of 4 - 12,000 ft. During the last 10 - 15 years, new branches have opened on the edge of towns or out of town.
Superstore	A retail outlet specialising in grocery sales, although not exclusively selling food. Of between 25 - 50, 000 ft.
Hypermarket	A superstore over 50,000 ft. These are always out of town or on large out of town complexes, and offer extensive car parks. They offer a larger range of non-food products, such as DIY and garden products and electrical goods. French and United States hypermarkets can be around 90,000 ft

Table 2.2: Supermarket Definitions

The next level of retailing development, beyond the supermarket and hypermarket was the shopping centre (Lowe, 2000, Lowe, 1998). The term has been defined as meaning:

> *A group of architecturally unified commercial establishments built on a site which is planned, developed, owned, and managed as an operating unit related in its location, size, and type of shops to the trade area that the unit serves. The unit usually provides on-site or associated car parking in definite relationship to the types and total size of the stores. (Dawson, 1983)*

Dawson notes that this definition was tailored to suit the United States, but the progression from the 1970s to the mid 1980s in the UK has typically followed this pattern (Guy, 1982, 1994). This model has a long tradition in the US, with the first developments being introduced in the 1920s and 30s (Hoyt, 1933).

It is one of the key themes of the new economic geography proposed by Wrigley & Lowe (2002) (and to some extent recent understanding of locational analysis in geography) that conditions and factors other than pure supply and demand nodes impact on the extent, location and success of retailing centres. Other factors such as culture and the current political climate have to be taken into account in order to create realistic models of retailing activity. The growth of cities into the surrounding countryside has been restricted since the end of the Second World War as a result of the planning system. Consequently, retailers cannot simply move into space, rather they have to find locations within existing conurbations for new stores. It is the government's intention to "save" the traditional high street from the growth of US-style malls (Dawson, 1988, Pigg, 1992). It is also a general aim to equip urban centres with the right mix of infrastructure and industry to be sustainable, viable and useful to the local populace (Ravenscroft et al., 2000, Ravenscroft, 2000, Thurstain-Goodwin and Batty, 2001, Payne and Cadman, 1990, Cox and Thurstain-Goodwin, 2002, Hopwood et al., 2000, Leitmann, 1999).

This appears to have the support of the British public. For example, a report by the American Express Establishment Services published in June 2003 has suggested that most customers prefer the high street to shopping centres, but are disappointed with the facilities, such as parking. This means that in order to satisfy the market, retailers will have to continue to base themselves on high

streets, but find better locations and improve the access and facilities of their stores.

2.1.3 The effect of e-tailing and e-commerce on the retailing sector

The retail industry has been one of those most affected by the growth of internet technology and e-commerce. The reasons for this growth are relatively simple. More people have become computer literate, have greater and faster access to the internet, and retailers have provided better and more tailored online services (Wakefield, 2004). For example, Forrester Research (McClellan, 2003) estimates that by 2007, 5 percent, or £8 billion, of the £160 billion British food market will come from home shopping.

The growth in internet shopping, particularly in the grocery sector has been noticeable and the predicted success and change to the retailing industry has been well sited in the trade press (Anon, 2000, BBC News, 2003). The modern home delivery grocery revolution can be traced back to the emergence of Grocery Express in the early 1980s. Grocery Express offered home delivery chosen from catalogues but ceased to exist in the late 1980s. Other experiments in the 1980s included Pink Dot and Peapod, which also provided a home delivery grocery service, but it was not until the popularity and widespread use of the internet in the 1990s with online catalogues and purchasing being made available, that the idea became truly feasible. (Anon, 2000, Gurley, 1999). However, feasibility alone was not all that was needed to make e-tailing a success. One of the earliest, Streamline (founded 1992), closed in 2000 and recent spectacular and well-documented collapses in dotcom industries have continued. There are, however, some success stories.

Tesco has not only become the leading light in the "bricks and mortar" grocery retailing sector, but is also the leading e-grocer. According to The Guardian (Finch 2001), Tesco is the world's biggest internet grocery business, with the highest share in the British market worth around £400 million. One reason suggested for the growth in the British market is that British consumers are less

perturbed about handing out their credit card details online or over the telephone. E-tailing in the UK has been considerable and continues to be a growth industry. It has brought changes to UK retailing and looks likely to continue to influence the sector, if not to become one of the major outlets of goods in the future. Yet not all analysts see the growth in e-retailing as sustainable. An editorial in the *International Journal of Retail and Distribution Management* reads 'Once the remaining online grocery upstarts fail, the return of home delivery will go down as one of the biggest and most expensive Internet disasters in history' (Ring & Tigert, 2001: 273).

2.1.4 The interaction in space of supply & demand

At its simplest level, retailing is about the interchange between supply and demand in space. Goods are manufactured and transported to outlets, at a given cost, and then sold to consumers, who travel to the outlets at some cost. The advent of the internet and e-commerce has not impacted on the system of retailing at this simplest level. Goods are still transported from manufacturers to retailers and consumers still bear the cost of transportation of goods from retailer to their home – in terms of delivery cost rather than collection cost.

Figure 2.2 below shows an interpretation of the interrelationships of modelling space with regard to retailing. It starts from the basic premise that retailing is an interchange of goods and money throughout space and so the major divisions of the model splits all processes or techniques associated with the spatial interpretation of retailing into one of two main groups - "supply" or "demand".

Supply

Within the supply group, one way of organising processes would be to split them into linear or non-linear. Linear models could be said to represent the "traditional" in retailing geography – that of locational analysis, land use, spatial competition and central place theory. They can be thought of as mechanical, empirical descriptions of space and spatial processes and are typified by the methods

described first in the 1930s (with Reilly's Law of retail gravitation) but mainly in the 1950s, which formed the mainstay of the quantitative revolution in geography.

The other conceptual division of the supply groups would be non-linear models. If linear is a mechanical, simple model of the systems involved, non-linear is a complex, coevolutionary or dynamic model that incorporates multiple factors or disciplinary backgrounds. This merging of previously separate factors and theories of change and evolution represents the current cutting edge in understanding space and interaction; that of chaotic, complex coevolutionary dynamic processes. Where the two groups overlap, there is space for a new approach, as investigated by the CASA Retail Project, to combine linear and non-linear understandings of retailing and space to produce a holistic and more realistic model of the spatiality of retailing interactions.

Demand

The modelling of demand – i.e. of the human populations who constitute the hinterland of the retailing centres - is split into two groups; those of **public sector** and **private sector datasets**.

The private sector supplies a great deal of the data that organisations use to map and model populations of consumers. Companies such as Experian and CACI specialise in providing information about social groups and the structure of retailing centres. One of the best examples is the provision of data collated in lifestyle surveys. These datasets represent extremely detailed survey records of ranges of activities from newspaper preferences, to cigarette brand, to choice of baby name. They can be provided as a series of values at a UPC level or ratios for some other areal unit.

On the other hand, the public sector's main contribution is that of the UK Census of Population, carried out every ten years by the Office of National Statistics. Along with this major source are other government surveys and data products. The Annual Household Inquiry is one example, and there are some other sources of data that are in the public sector.

Cutting across all of these sources of data is arguably the biggest and most valuable source of data concerning human populations, namely geodemographics. These draw from both private and public sources and take the form of both commercial products (which can be expensive e.g. in the case of MOSAIC and ACORN) or freely available public and academic domain sources, such as GB-Profiles '91 (Openshaw and Wymer 1994). Finally, where all of the above methods of comprehending retailing meet is in models that show the manner in which retailing works, isolated from any other system, such as the example shown in Figure 2.2.

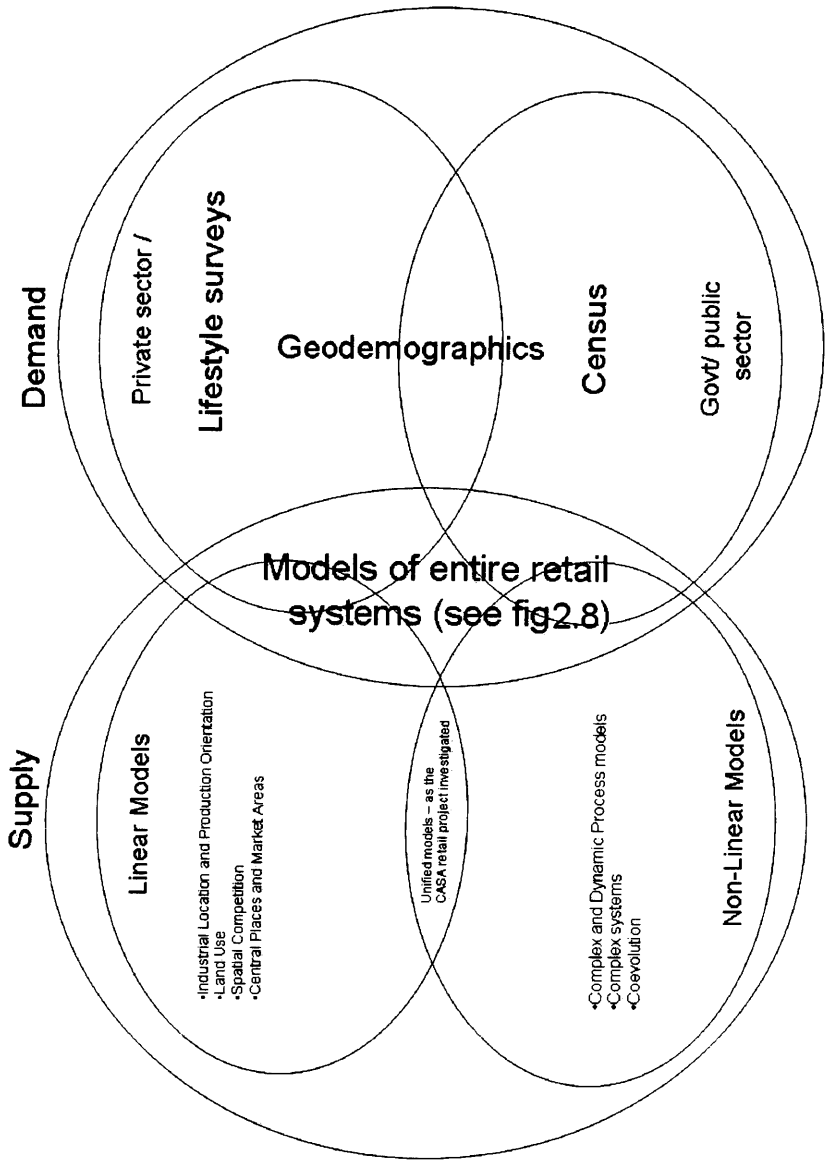

Figure 2.2: Conceptualisation of retailing spaces

2.1.5 The role of space and spaces in retailing interaction

All retailing interaction takes place in space. However, it is not necessarily "space" as is commonly understood in terms of the "real world" (i.e. an actual existence in time [as opposed to a virtual world or reality] which in "force or effect provides the sensation of a real-world experience" (FMH, 2004) with the high street and stores), but possibly an abstract or virtual space, such as online buying. This can lead to an interesting discussion, though not relevant to this research, of the nature of reality and how realities could be typified and incorporated in a model of the world. In essence, a map or model is a representation of reality, and unless we can define reality our models will always be lacking in some way (Greatbatch and Lloyd, 2002, Lacey, 1976). An appropriate way of describing the retailing environment is to say that it is a mix of real and abstract space. Information space impacts on real space because offices can now be located in more places.

It is not imperative for a company to have a high street location to interact with its customers. This in turn impacts on retailing in that the location of offices creates retailing activity nearby. It is the premise of this work that the terms "space" and "environment", when used with reference to retailing, not only lack proper definition, but, worse still, mean several things at the same time. The term "retail environment" is a frequently used one and can relate to several things at the same time. For example, "retail environment" is most commonly used to describe a kind of virtual information space in which transactions, share prices, tastes and trends all interact to influence the potential success or failure of sales (Murphy, 2003a).

The retailing environment could also describe the spatiality of retailing store location or demand hinterland. So, retailing not only occurs in space, but in more than one kind of space. With the addition of virtual markets, provided by the advent of online shopping, the *multi-spatiality* and *multi-scalability* of retailing increases and the whole concept of the retailing environment becomes even more complex (Funtowicz and Ravetz, 1990).

2.2 Models of Supply & Demand

2.2.1 Models of supply

As discussed in the previous section, we are assuming a model of retailing interaction that takes place in space, but is constructed of a mix of supply and demand. The next sections will deal in detail with definitions and descriptions of some of the main descriptions and typologies of supply in a spatial context.

2.2.1.1 Classic Locational Analysis

Classic locational analysis seeks to describe the way in which retailers should ideally place themselves in order to minimise the costs of supply and maximise the profit from some communities of consumers. Location analysis techniques have been categorised into four classes by Hurst in (1974) *A Geography of Economic Behaviour*. These are:

- Land Use
- Industrial Location and Production Orientation
- Central Places and Market Areas
- Spatial Competition

a. Land use.

This kind of model of retailing location is based on the assumption that different kinds of land use have different values, in specific locations. For example, Von Thünen suggested that the distance a farmer was from the marketplace would affect the crop that farmer produced, because certain crops were more expensive than others to move. He then went on to say that there must be a balance struck between the expense of production, transport and the location of the farm in relation to the market place. This work was continued by Wingo (1964 a and b) and Alonso (1964), who made similar observations, and added a bid-rent curve to the simpler demand curve models of their predecessors. This curve could be used to find the spot where a balance was stuck between distance to the centre, cost and

quantity of composite good (meaning all other costs, other than income, land quantity and the travel cost).

b. Industrial Location & Production Orientation.

The most relevant contributor in terms of this research is Leon Moses who, in 1958 (following on from at least 50 years of research in this field – see Freidrich and Weber, 1929), created a curve in which each and every point had the same output cost, but represented a different location. His point was that location was as important to the success of an establishment as output, input combination and price.

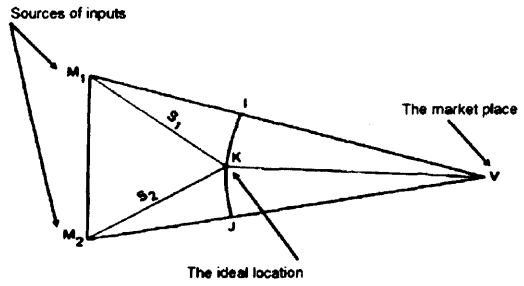

Figure 2.3: Moses' classic iso-cost curve, after Moses 1958

The specific travel costs or other factors (such as labour or capital expenditure) give the curve its shape. This curve can be considered the cutting edge of the retailing optimisation in that any point along it represents an ideal trade-off in terms of profit and cost. The idea is that a company makes a product of two factors – in Figure 2.3, M1 and M2 - and sells it at point V – the market. The point K is the ideal location for the business because it is a function of the prices of the inputs and the distance to market (it makes more sense economically to be nearer to the more expensive of these things and so the point will be weighted towards one or two of the three attractors. So the point on the curve JI corresponds to a specific location with the same value (an isotim) and the position K will be the best position.

c. Central Places and Market Areas

Central Place theory (CPT) has probably had the most important and lasting impact on the strategic locational planning of the retailing industry. It is still a theory that is applied (albeit within certain constraints enforced by its application to real world problems) by retailing planners today, most notably in some applications of Location-Allocation modelling. The interviews conducted by this research (Chapter Three) reveal that, although it is not truly applicable to modern technology, or indeed actually a very practicable technique, it remains in the minds of those who make decisions about location in the retailing industry. In the 1930s Walter Christaller (after studying the distribution of urban settlements) put forward the first attempt to understand the nature of central place. Although his work was based on earlier research of others, it was Christaller who considered the question of whether there are rules that determine the size, number and distribution of towns (Christaller and Baskin, 1966).

Christaller used central place theory as an ideal to explain how nodes served and influenced surrounding areas and used geometric shapes – triangles and hexagons – based on the distribution and size of settlements to construct surfaces of supply and demand. It represents an extremely idealised hypothesis of the way in which retailing is distributed spatially.

Christaller also introduced the important concepts of **range** and **threshold**. Range is the maximum distance that a consumer will travel to purchase a product and threshold is the minimum amount of trade that a business has to do in order to survive, selling that item of goods alone. Taking both the range and threshold of goods into account, Christaller argued that one could then identify the number of establishments that an area could sustain. Christaller argued that it made sense for businesses to locate themselves as close as possible to their key market (almost a fore-runner of a GIS-type best site analysis, using geodemographic weighting to locate new stores). But again the application is different: Christaller's is a top down analysis of an entire settlement system, but the geodemographic approach is more regional, even local, in emphasis. The logic behind this is straightforward; if

the store is close to consumers, then travel costs are minimized, but the amount of demand is maximised and the best location for a business is therefore in the centre of their prospective hinterlands (meaning the areas that they serve).

The theory works on the basis that there are spatial thresholds of demand, below which either a product will not be available for sale, or the business will be unprofitable. This demand zone is located around one central point and serves a number of service points around the central point, which will organise or distribute themselves spatially in order to be neither too close to another, nor too far away to be profitable. The central point will have a maximum number of service points it is able to sustain and any extra businesses will not be able to survive. Having modelled this at the primary stage, the model (generally hexagonal), or surface weighted hexagonal areas, will consist of one main central and several service nodes. The secondary nodes become a kind of local central place in their own right and will support their own attendant service nodes (Christaller and Baskin, 1966).

In summary:

1. The bigger the settlement, the less there are of them.

2. The fewer the settlements, the larger the 'hinterland' or 'sphere of influence' (shown by the hexagonal boundaries around the different settlements above) of its services.

In 1929, Reilly published the paper "Methods for the study of retail relationships". Based in Texas, this work used the analogy of Newton's law of gravity to model the effect of population, distance and the amount of retailing trade on the structure of central place. As referred to briefly before, in the case of central place theory, the gravitational effect of central place or settlements on the surrounding hinterland has remained in the minds and locational policies of the retailing sector. Gravity models are still commonly created by retailers, taking advantage of the ease with which these can be created using GIS technology.

d. Spatial competition.

Spatial competition can be thought of in respect to this research as the act of locating a business close to a competitor, sometimes aggressively so. It makes sense for some businesses to locate close to each other, although this appears to fly in the face of retailing location of the Christaller sort. This is the suggestion made by Hotelling (1929), building on the work of Egdeworth (1904). The classic analogy from Haken (1984) is that of a beach. If an ice-cream van locates in the centre of the beach he or she maximises his or her contact with customers on the beach. If another ice cream van were to arrive, in order to maximise the remainder of the customers it makes more sense to locate near to the initial ice-cream van. The two ice-cream vendors could co-operate and spread out across the beach so that they both cover an equal amount of the beach. A more aggressive policy of movement towards the opposition, coupled with a more desirable product, will result in a greater share of the customers and profit.

The reason why this happens is that it is effectively a Nash Equilibrium (Kreps 1990) under special (spatial and economic) conditions. The competitors find that although intuitively it should make sense to locate further away from each other, it is actually easier to locate near to each other. What happens is that the benefit of sharing a known and secure market outweighs the potential but unknown (and possibly less lucrative) benefits of a split market and a position that reduces the size of the potential customer base. This means that one poaches part of ones neighbours' territory, whilst retaining yours.

In the real world this policy of locating near to competitors can be seen in the coffee house industry, although it is fair to say that other factors may influence their location. A simplistic example of a spatial organisation that appears to follow Hotelling's logic can be seen in the maps that constitute Figure 2.4, where the maps shown as A, B & C are in a clockwise direction starting at the top left.

These illustrate the level of coffee houses within Greater London that can be considered clustered. It was performed using a single linkage cluster algorithm wherein a minimum distance between points is prescribed and other incidences

that occur within that distance are counted (Hartigan, 1981). If the number of points that are within the set distance of each other is equal or greater to the prescribed number then they are considered clustered. In this case two cluster investigations were performed at distances of 400 metres and 500 metres. In both cases the number of occurrences needed to be clustered was three. This was because it was considered that two coffee shops within 500 metres was not necessarily an example of clustering, but three or more was. So if three coffee shops can all be found within either 500 or 400 metres of each other, then those coffee shops will be considered clustered.

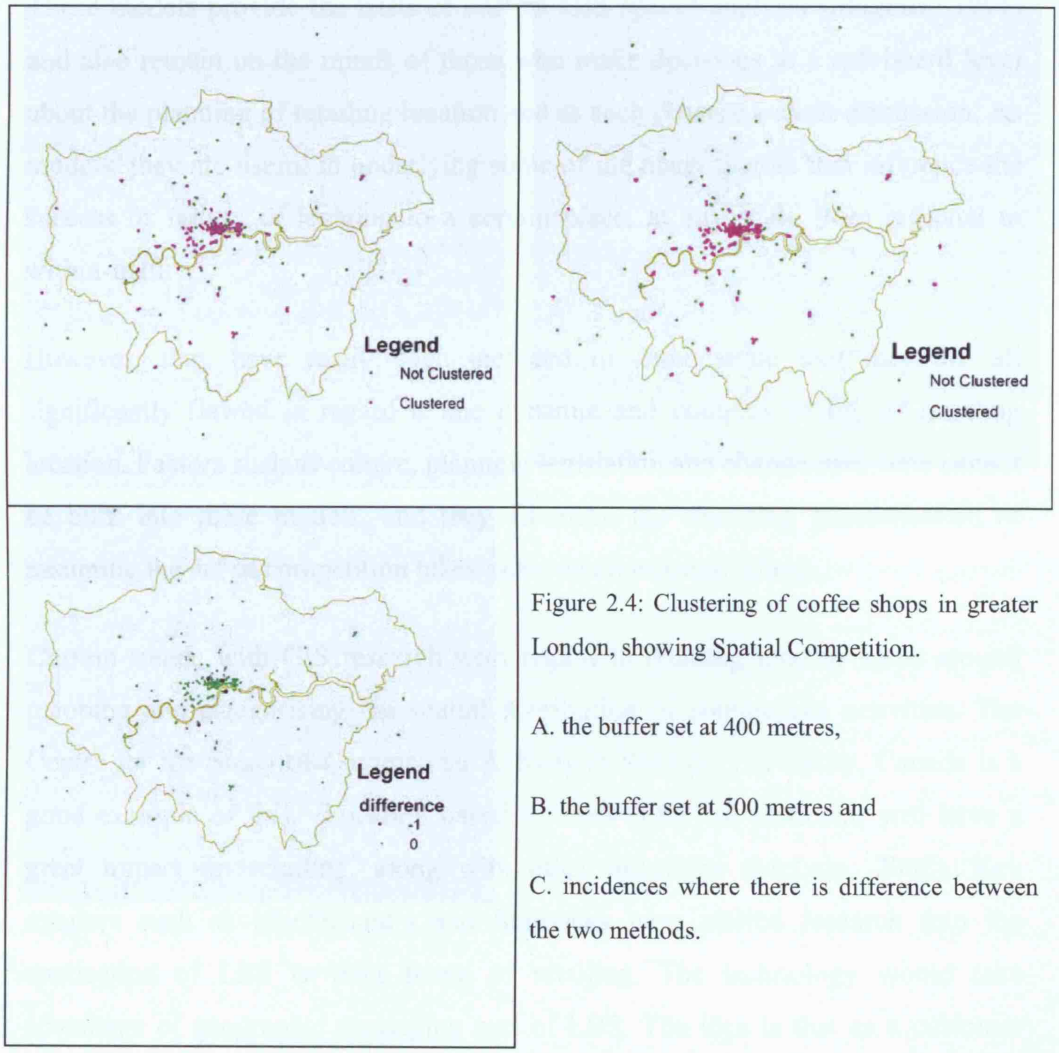

Figure 2.4: Clustering of coffee shops in greater London, showing Spatial Competition.

A. the buffer set at 400 metres,

B. the buffer set at 500 metres and

C. incidences where there is difference between the two methods.

It can be seen that even shops that do not meet the clustering requirements still appear to be located near to each other.

With regard to this piece of work, the point made by Hotelling's work is that it highlights that retailing location is not as straightforward or as mechanical a phenomenon as perhaps is initially understood. In all probability, retailers need to be close to and / or far away from rivals at the same time, although of course that is paradoxical. Each case is far more complex than the simpler models suggest. However, it is often surprising how sometimes they appear to reflect reality. The location of coffee shops is a good example. It appears that there is a policy of locating near to rivals, as there are far more clusters than there are non-clusters.

These models provide the basis of current GIS spatial analysis (Maguire, 1991) and also remain on the minds of those who make decisions at a sub-board level about the planning of retailing location and as such deserve a short discussion. As models, they are useful in underlying some of the many factors that influence the success or failure of locating to a certain place, at any scale from regional to within-mall.

However, they have really been included to demonstrate that they are all significantly flawed in regard to the dynamic and complex reality of retailing location. Factors such as culture, planning legislation and change over time cannot be built into these models, and they all make the sweeping generalisation of assuming the act of competition takes place on an isotropic plane.

Current trends with GIS research with regard to retailing tend to focus around mapping and categorising the spatial distribution of commercial activities. The Centre for the Study of Commercial Activity at Ryerson University, Canada is a good example of this. Location based services (LBS) in particular will have a great impact on retailing, along with other industries (McLain, 2002). Key retailers such as MacDonald's and Starbucks have started research into the application of LBS to their brand of retailing. The technology would take advantage of geographic messaging part of LBS. The idea is that as a customer enters a geographic zone around a restaurant they would receive a message to their mobile phone which would print a digital voucher on the view screen of the phone. This voucher would entitle the customer to some bonus or gift in the store

in order to entice them in. This would be likely to take the form of extra or additional portions of food.

The coffee shop model could involve the customer registering, along with friends, in a "buddy" group. The system would alert the customer when both the initial customer and registered friend were both within a binding geographic zone at the same time. A message would be sent to both, stating that the other was nearby and possibly that they had not seen each other for a certain amount of time and some kind of inducement offered – for example, free bagels with coffee. Alternative LBS ideas include zones of influence surrounding buildings, using technology associated with hubs of wireless networking.

At present, the effect of "urban canyons" (tall buildings commonly found in CBDs, resulting in only a small view of the sky and so not available to Global Positioning System satellites) and the coarseness of cell identity orientation and Assisted Global Positioning System (AGPS) mean that many LBS systems cannot work to the quality required at present (Wilson and European Space Agency, 2005, Gow, 2002). To address this problem, mobile devices could be re-orientated by moving them within the sphere of (for example) a restaurant or pub. The phone would be charged with local information and would be able to orient itself correctly within the city, but at the likely cost of the downloading of a menu or special offer prices. The advantage of this is that the phone can then orient itself accurately within a city. This kind of bartering for information, in exchange for marketing, seems a reasonable compromise. It allows the consumer to take advantage of intelligent wi-fi[1] networks but exposes them to a level of advertising only slightly higher than the existing level. The impact of the Galileo satellites (projected to be operational 2008) is difficult to predict (Wilson & European Space Agency, 2005). There will be an increase in accuracy of orientation, which may result in the bartering model being obsolete, but that increase in accuracy may lead to the development of more reliable and stable LBS projects.

[1] The term "wi-fi" stands for wireless fidelity, a term coined by the Wi-Fi Alliance organisation, which provides certification that products are "wi-fi certified" (a registered trademark)

The fusion of GIS, Personal Digital Assistants and 3rd generation phones have lead to an information based revolution that is already beginning to have an effect upon the retailing industry. The consumer can now not only choose items and then purchase from home, but can perform these sorts of operations while travelling or in a location other than the office or home. GPRS capability, particularly in conjunction with AGPS, GPS or wi-fi, now enables the consumer to query and interact with the high street in real time and in some detail.

2.2.1.2 Best site models / arithmetic or weighted overlays

GIS can be said to be in the main about information tied to locations in space. It is a common use of this technology to locate preferred sites for a particular purpose, assess existing sites or make judgements about the allocation of services based on the spatial characteristics of a place or system in space, such as a road or rail network.

As can be seen in Figure 2.5, in the raster data structure in particular (although this can be replicated in vector structures, particularly vector grids), values can be given to cells (or polygons) to represent either real values (such as height or distance) or nominal codes (such as land use or land cover). Values can be combined using indices or presented, as shown, in different map layers.

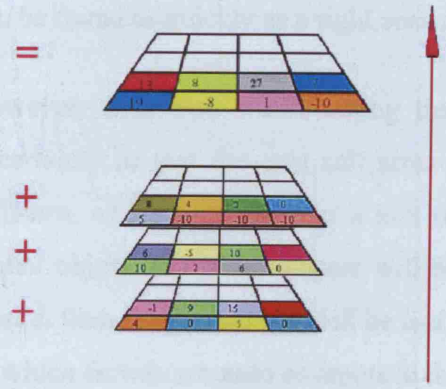

Figure 2.5: Weighted overlays. Using raster data structures or gridded and aligned vectors, complex calculations between different representations of the same area can be performed.

A long-standing and common GIS technique of discovering the best location for some building or activity is the overlay technique. This takes advantage of the ability of GIS to stack layers of differing information and calculate values

between the layers. In the simplest form, the arithmetic overlay, each pixel is given a value to represent the land use, land type or some other value (such as height above sea level, slope aspect etc). These values can be converted to a relative value (-10 for not very suitable and 10 for very suitable for example) and all of the layers are then added together. The most suitable layers will add up to greater values and the less suitable pixels will add up to lower values, and so the produced layer will be a surface of suitability, with the highest values being the most suitable.

The weighted overlay procedure is conducted in a similar manner, with pixels awarded values for how suitable a use/type is for the purpose in hand. The difference is that the layers are then weighted to reflect how important they are overall. For example, in the building of a new visitor centre, slope may be considered crucial and so have a weight of 60%, whereas soil and proximity to road network may have a combined value of 40%.

One problem with this is that it is often a subjective decision as to what the weightings should be, so care must be taken to ensure that any decisions are documented in order to understand what the resultant surface depicts. In this case the strength of GIS is its weakness; the fact that spatial information can be combined quickly and easily into best site surfaces means that a wrong answer can be found as quickly as a right answer.

However, it is also worth noting that this kind of process is susceptible to uncertainty in that the grid cell sizes of the input and output surfaces may be different, which will result in a loss of accuracy. Also, any representation of a spatial object in a raster dataset will be limited by the cell size, and any object smaller than the ground cell will be lost within that cell. This can place limitations on which factors are used as inputs in the overlay. For example, small objects may need to be pre-processed in order to be included in the analysis, by for example, interpolating a point theme to a surface. Any pre-processing would also have uncertainty associated with it; such uncertainty associated with both the interpolation process and the extra level of processing.

2.2.1.3 Location allocation models

Location-allocation (L-A) models concern the efficiency of networks. They are most typically used to site public sector services such as schools or fire stations. Restricting factors can be placed on the links that make up the network (one directional roads, speed limits, rush hour maximum speeds and other kinds of impedances) or groups of links (no fire station can be more than 10 minutes drive from some other important location on the network) (Lea 1973, Schietzelt & Densham 2003).

L-A modelling has been applied to the optimisation of retailing logistics (Mendes and Themido, 2004), although it is generally more usually applied to the optimisation of logistic supply networks within a company (for instance, how does Tesco replenish the shelves in all of its stores over night in the most efficient manner?). According to Ghosh and Ruston (1987) L-A can be traced back to the work of Weber in the late 1920s and they cite cases in which L-A can be used for modelling consumer choice in which the weights of network links describe the tendency of consumers to travel to a particular retailing centre. Beaumont (1987) makes the point that L-A is linked to central place theory, or that central place theory is a kind of L-A, reinforcing the suggestion that there is a traceable route from early economic models to current spatial analysis.

Within retailing, L-A has great potential for use. Retailing is fundamentally about the interchange of money and goods through some kind of network or environment. In terms of the network, there are shops, depots and roads between which goods must be moved. Lorries must move between the depots and shops, along the road network and within standard L-A modelling functionality in GIS there are algorithms that will maximise the efficiency of these transactions. The network analogy is also apt at a higher level of detail. Further to the "real" network of roads and supply lines, there is a network of information and electronic currency transactions that take place in a network of transaction only. This network has strong links with the real network, in that its' hubs will be located in head offices and the cabling likely to follow existing motor routes.

They follow existing routes because it is easier to maintain them, and the paths exist already, without having to cut through some features such as property parcels that may be expensive to purchase. Furthermore, communication technologies are likely to rely to some extent on the existing communications infrastructure (for instance, existing telephone lines) and so will follow the existing routes of communication.

2.2.2 Models of demand

2.2.2.1 Geodemographic profiles

In simple terms geodemographics are the characteristics of society in a specific place. In the UK this most commonly refers to a proprietary class georeferenced to postcodes.

The basic statistical technique behind geodemographics is factor analysis or cluster analysis (Openshaw and Openshaw, 1997, Berry and Linoff, 1997). A number of centres are created and the data applied to one of these centres, based either on a random assignation or some arbitrary grouping. As each individual and that individual's records are dealt with in turn, records are tied to a centre. The dataset is processed several times and the process will continue iteratively until all records have been assigned. At the end of each process each centre will only contain records that are closer to the centre of that centre than any other centre. If necessary, the centres will be moved during the process to ensure that each record is more closely related to all the other records in that centre than in any other centre (Sleight, 2004).

In practical terms a combination of census and other surveyed data is combined in a database and a clustering procedure is carried out. In the case of MOSAIC (Experian 2002) the statistical technique is known as iterative relocation and is concerned with levels of similarity based on least squared differences. The cluster algorithm will divide the data into a number of groups (this number can either be defined or the statistical package can often pick a suitable number) in which each member of each group has more in common with its fellow group members than

with a member of any other group (Cuthbert and Anderson, 2002, Gatrell et al., 1996, Everitt, 1993).

The upshot is a value or code added to post code unit or Output Area that signifies the societal "signature" of the people who live there. With an investigation of the data and a groundtruthing exercise, catchy names and accurate descriptions of the groups or "types" can be allocated. These simplified signatures are exceptionally useful in business or as a social research tool (Chrisman, 1987). What they do is carry on the work of Booth (Booth 1903) and his attempts to define society into groups, based on shared social characteristics, but in much more detail. On average, a country's geodemographic profile will contain 50 – 60 groups, whereas the UK census only allows for six. The six groups were created by Stevenson in 1913 (Stevenson, 1928) and revised many times up to the present.

2.2.2.2 Bespoke homogenous areas

Standard literature about uncertainty in GIS (Zhang and Goodchild, 2002, Chrisman, 1991) has discussed in detail the problems associated with applying statistics to arbitrary areal units, such as unitary boundaries. The modifiable areal unit problem and problems of ecological fallacy in geographic representation are well reported and have resulted in retailers (among others) creating their own, bespoke definitions of society. Using an interpolation or clustering technique and data sources other than the standard governmental or lifestyle survey, surfaces can be produced that show geographies of population that do not conform to the typical reporting units of governmental areas (Haggett et al., 1977).

Martin Callingham (Callingham and Baker 2001; Callingham and Baker 2002) has done extensive work, investigating new and innovative ways of measuring markets. Of particular interest to this work has been his investigation into the creation of truly homogenous communities.

Some companies such as Whitbread's the brewers or Marks and Spencer commission or produce themselves bespoke classifications. The example in figure 2.6, taken from Longley et al 2001, shows a classification of the UK based on

beer preferences. It is a matter of opinion (and it is certainly that of the brewers) that the type of beer drunk more readily and understandably defines the strata of society far better than typical geodemographic descriptions such as "Pebble Dash Subtopia" (Experian 2002). In this image the yellow represents bitter, purple premium lager, brown mild and green extra strength lager.

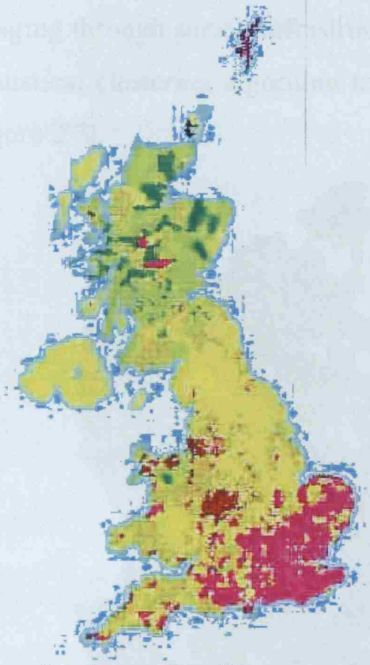

Figure 2.6: Geography of beer consumption, from Longley et al, 2002

Taking data from varied sources and creating areas of homogeneity that are not constrained by artificial or natural boundaries is one of the mainstays of geodemographic profiles themselves. Although there is a level of uncertainty associated with postcode units (Raper et al., 1992).

The problem lies in the fact that the unit post code (the smallest unit of the postcode system) is not an area, or a point, but rather a route walked by a postman (Raper et al., 1992). As a result, points are created in a slightly arbitrary manner, to represent the centre of the route. In order to then apply statistics to a unit postcode "area" the geodemographic company must create a series of Theissen polygons around the points, which introduces even more uncertainty (Boots, 1986, Flowerdew and Openshaw, 1987, Fotheringham and Wong, 1991).

A recent study (Gallent et al, 2004) created natural and homogenous regions of rurality. The aim of this project was to redress the perceived lack of classifications of rurality by applying techniques developed in geodemographics to provide a complex, diverse and high spatial definition approach to the problem of defining "types" of rural England, employing a set of between 150 and 200 attributes ranging through social, infrastructural and environmental factors and then using a statistical clustering algorithm to assign each case to one of 6 cluster bands (see figure 2.7).

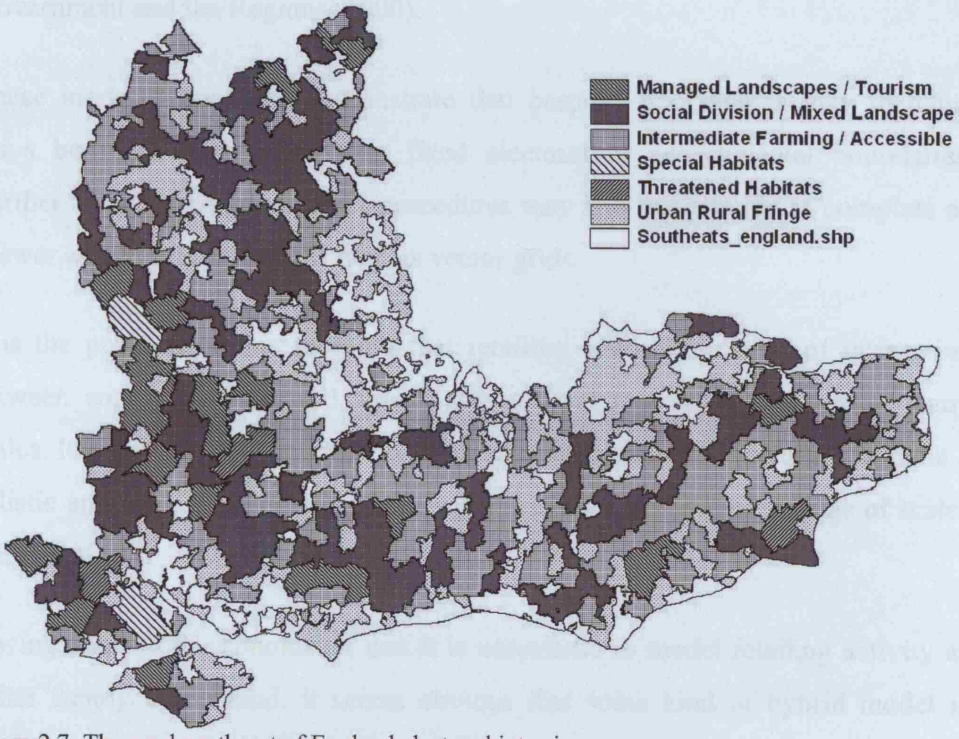

Figure 2.7: The rural southeast of England clustered into six zones.

The great advantage of this approach is that it cuts through arbitrary geography by using a kind of raster simulacrum. It benefits from the advantages of a continuous surface approach (Brown, 1998, Couclelis, 1992, Cross and Firat, 2000), but sidesteps the associated problems of raster and attribute data, by really being a vector representation. The further advantage of a map product is that it is both easily disseminated and understandable. Internet applications for the integration and download of GIS maps are already well established and would be well within the capabilities of a large retailing organisation.

In the final computation, 147 variables were used in the final clustering. These came from a multitude of sources. Environmental data (such as designated areas) came from the government's MAGIC website (magic.gov.uk); social data came from the 2001 Census of Population, provided by the Office for National Statistics (www.statistics.gov.uk); and borders and boundaries were downloaded from the UKBorders site, hosted by EDINA (www.edina.ac.uk/ukborders). Additional data sources such as NOMIS data and the Office of the Deputy Prime Minister's Index of Multiple Deprivation 2000 were also used (Department of Transport Local Government and the Regions, 2000).

These kinds of approach demonstrate that bespoke geographies may in many ways be more appropriate than fixed electoral or governmental boundaries. Further to that, traditional raster procedures may also not provide as complete an answer as a hybrid approach, such as vector grids.

It is the position of this research that retailing is a combination of interaction between supply and demand across abstract and real space and across many scales. It is unrealistic to attempt to create an accurate model of retailing without a holistic approach, incorporating both supply and demand across a range of scales and spaces.

Having reached the conclusion that it is unrealistic to model retailing activity as either supply or demand, it seems obvious that some kind of hybrid model is required. This model will need to take into account change over time, the spatial units used, the non-retailing factors that make a vibrant retailing centre and the standards of turnover, floorspace, primary activity, employees and so on (Bruhns et al., 2000).

2.2.2.3. Supply and demand within a centre or store

One of the criticisms of the classic location models is that although to a certain extent they could tell a retailer what town, or part of town to locate to, at very small scales they are unable to provide much help. Models of pedestrian flows through stores or centres are an area of interest to many retailers and have

influenced decisions about location, and in particular re-location of stores within a centre. The simplest method of collecting data about relative density of flows and pedestrian number is to set up a series of "gates" within the centre (Anderson, 1985). These gates are pairs of researchers who count the numbers of pedestrians passing them. Using common GIS techniques, such as kernel density estimation, these samples can be interpolated into surfaces of "hot spots" or flows which show where the main concentration of pedestrians will be in a town (Bithell, 1990, Diggle, 1985). This has been used recently in Glasgow by Marks and Spencer's to relocate a store that had become isolated from the main flow of visitors to a part of the town centre by a road redevelopment. More complex tracking systems have recently been developed using radar sensors which can identify individual pedestrians and track their movement through a store or centre (Kitazawa et al, 2003).

Recent work has been conducted at CASA with cellular automata (CA) to model the flows of pedestrian movement around urban centres (Benenson and Torrens 2004, Batty 2001). Cellular automata are cells that move independently, or more commonly live or die, in an array. The CA have rules which govern their movement or survival. In the classic "game of life", rules were that a cell would survive as long as it had a certain number of neighbours. The user can draw groups of cells on an array, click "start" and the array will step through a number of iterations showing the survival of cells, until either a predefined number of iterations occur or no more change is possible.

In recent years the cells have been given rules concerning their movement across an array, which can be constrained by structures to represent street geometry or the structure of shelves in a store. A common technique is to use concepts from swarm theory – the theory describing how insects navigate to and from food sources. In this application the cells are given a random starting point and attractors (sugar for ants, shops for shoppers) and the automata allowed to flow across the array. Routes to and from attractors will become enforced with use and become primary routes. These routes become more pronounced as they become reinforced and can serve as pointers to areas of congestion or attraction.

2.2.2.4 Complexity

The CASA Retail Project investigated ways in which complex systems theory could be coupled with GIS to augment or replace current modes of decision making in the retailing sector. This section will provide an introduction to complex systems with particular reference to the retailing sector.

In recent work Peter Allen (1997 and 1999) has championed the use of complexity theory in retailing and industry. The principles of complexity theory state that events such as the running of a shop through time are not a linear or mechanical process. Rather it is a series of inter-related events which affect the success of failure of the events. The analogy is that of a complex co-evolutionary progression, in which events may trigger or impact upon other events in a chaotic manner, rather than a mechanical one. The research is influenced by models of complex environments and ecosystems.

This step away from mechanical structures of behaviour is paralleled in the take-up of CA by social scientists for the study of social interaction or pedestrian movement. This non-linear progression is modelled using an array of "events" which are launched in a random fashion. These events could be analogous to shops in a national chain, product-types in a chain, or individual brands of products within a product niche. As these events are launched they succeed or fail and their level of success creates a shape of success. This shape follows the contours of the launched events – similar to bars in a bar chart and then influences what can and cannot succeed. If the shape predicts that the location of an event is suitable but there is no event launched already, the chances are that the event will succeed. This will affect the shape and so other events may become less successful or not start as a result. The work created by this research could be applied to either the supply or the demand chain. In terms of supply, the investigation of successful store-suites or product lines is one that has been proposed by Peter Allen, but in terms of demand chain, the modelling of consumer choices or changes in demographic hinterlands is a possible application.

2.2.2.5 Change through time

One problem with traditional methods of modelling retailing interaction, supply or demand is that retailing systems are in fact dynamic and most models can only represent a snapshot in time. Time series analysis can be carried out on tables supplied with the Town Centres Project (when there are enough of them) or Census of Distribution (when they have been digitised) but as yet modelling change through time in the extent of retailing centres is not something that has been significantly attempted at the scale of town centres (Birkin et al., 2002).

Urban change, in terms of land use, has been modelled significantly using cellular automata, although mainly in the US. Recently though, CA have been used to model the structure of cities and provide insight into the future growth of European cities and in US cities in greater detail. These models can be used to perform straight line prediction of growth or to perform hypothesis testing.

Definitions of society, like society itself, change through time. Recently, the New York Times carried a story about the emergence of a new key demographic - LOHAS, an acronym for "lifestyles of health and sustainability," The suggestion is that LOHAS is set to become one of the biggest new consumer sectors. The name encompasses things like organic foods, energy-efficient appliances and solar panels as well as alternative medicine, yoga tapes and eco-tourism. These products accounted for a $230bn market in 2000 (Cortese, 2003)

This changing nature is set to continue – how could it not? Growth is predicted in the sector - industry experts estimated that the retailing sale of food through supermarkets and superstores would increase by 16% between 2001 and 2005 (Keynote Publications, 2001). Planning regulations are in a state of reform, regional governance and reaction to the current boom in the housing market are changing the geographies of both supply and demand. The change in the very nature of shopping in terms of e-tailing and e-commerce will affect the nature, abundance and location of our retailing outlets (Batty 1997; Tomlinson 2000; Finch 2001; Murphy 2002, 2003a; IMRG 2003). To use an environmental analogy

the organisations that will win the race of life of retailing will be those who adapt to change in the quickest or most appropriate manner.

2.2.2.6 Other factors

a. Cultural.

The simplest way in which this impacts on the retailing industry is in change in style and fashion through time. There is some argument as to whether the fashion industry responds to changes in public concepts of the fashionable or whether the fashion industry influences public opinion to desire what it has produced season to season. In truth there is probably a mix of the two.

The take-up of new geographic technology may well be driven by changes in fashion and culture, rather than by a clear perception of the advantages by the consumer. There is a potential to tap into this latent market. There may be opportunities for retailers to encourage the sale and take-up of newer generation phones by "piggy-backing" the technology on a fad or trend. The creation of competitions or art forms that rely on the use of mobile technology could be seen as a method of tying sales and brand to a lifestyle of youth culture.

Another possibility is the creation of navigational tools for 2 ½ generation phones, using an incentive-based information-trade system. It would involve the input by a user of some kind of locational text and a digital image sent to a central hub.

b. Political.

The political climate at the time can impact on the retailers' ability to locate in the case of planning regulations, or in terms of access to government statistics. For example, the UK Prime Minister Margaret Thatcher refused to continue the Census of Distribution because she believed in a laissez-faire market economy and believed that if industry truly needed a product like this then the market would create one (Sparks, 1996).

That aside, the government in the UK has always been reluctant to release data about retailing at any useful scale for fear of disclosure. This attitude was, until recently, mirrored by the retailing industry, though Neil Bennett of Marks & Spencer is among a small group now advocating the sharing of knowledge and a more open access to statistics. The argument goes that the benefits of better knowledge and cooperation outstrip the benefit of the advantage of having a proprietary database of consumers or retailing statistics.

c. Planning regulations.

We are told that the town centre is under threat and should be protected. This has impacted the way that retailers are able to locate their businesses. Planning philosophy has changed (and continues to change) through time. The change in philosophy from the wholesale redevelopment of the 1950s through the 1970s "parades" to the modern post-industrial attitude of conserving green spaces and the "feel" of the town centre and anti-"out of townism" demonstrates this.

Furthermore, the question of whether we actually need retailing centres is raised. If we can order our goods from home or work and have those goods delivered, is there any point to shopping centres anymore?

2.3 Defining Retail Centres

2.3.1 Uncertainty in Retail Centre definition

The perception and understanding of what is or is not a "retailing centre", "town centre" or the "retail environment" is by no means consistent. There are probably as many definitions as there are stakeholders. There are also issues of definition and ontology or naming of objects. There are a multitude of terms and technical definitions of centres and the objects within them. To use a computer science term, there is little interoperability between the terms, in that the same term may not mean the same thing to different organisations, or, more commonly, the same concept will have different names across organisations.

2.3.1.1 Discussion of issues concerning definition, role and attitude

There was a steady progression in development over a number of centuries leading up to the period immediately after the Second World War, with the result of a roughly standard model for retail centres in towns across England. The town centre could typically expect to contain a mix of locally based retailers, offices and municipal buildings. Over the centuries until this point, with a lack of public or private transportation, people found it convenient to live and trade in small urban centres. The lack of transport meant that it was not only difficult to travel in order to shop, but also placed a limit on the quantity of goods one could buy. As a result the town centre typically evolved with a cluster of small independently owned retailers that could provide goods frequently and in smaller amounts. The impact of transport has been significant in the post-war period and resulted in the out of town retail centres and the subsequent moves by the government in PPG6 to redress the move away from town centres that are discussed at greater length in section 2.1.2. This has created a potential blueprint for dialogue regarding what a town centre *is* and what a town centre is *for*.

The government identified in PPG6 and in its publication *Vital and Viable Town Centres – Meeting the challenge* (Urbed and Comedia, 1994) that the growth of out-of-town food retailing had resulted in many of the smaller town centre grocers going out of business and a subsequent increase in vacant lots and that this in turn signified a "general decline in the quality of the environment of the centre". This raises the issue that town centres are not merely locations or cluster of retailing but rather have some other functions, in which a healthy urban environment is necessary.

The logical argument is that if the economic vitality of a town centre declines, and with that the urban environment, then all of the other things that a town centre does will suffer, and will have a community-wide impact. Another argument put forward is that if town centres are revitalised and local food retailers within town centres provide a good service, people will be less inclined to make car journeys out of town, which will have a beneficial environmental impact. Therefore town

centres act as a lynchpin of the community, not only housing material things that are needed by the community – offices, shops, town halls and so on – but by being healthy itself can have some vicarious effect on the health of the community it serves. So we can infer from that that town centres clearly have many roles and serve the local economy and community in multiple ways.

2.3.1.2 Technical Uncertainty

There are many purposes of delimitation or mapping. – such as to define economic development areas, planning zones, to monitor the health of a town centre or define which branch of local government is responsible for an area. This has an understandable impact on the methods and results of delimitation. For example, the objectives and interests of a local authority town planner and those of a human geographer will be different. One of the objectives of the Town Centres Project was to provide a universal and objective approach to delimitation.

However, even if the methodology is unified there remain sources of uncertainty within even the most objective and universal of methodologies. Without mentioning the uncertainty inherent in all spatial data (Chen, 2004, Greatbatch and Lloyd, 2002), the components that make up a surface or data-base from which a delimitation is constructed can have various levels of uncertainty (Couclelis, 2003, Fisher, 1991).

There can be considered a dichotomy in the uncertainty within data sources. Firstly there is uncertainty within attribute data. If definitions are unclear, the database structure imperfect or the data simply mistyped, there will obviously be an error in the final delimitation (Goodchild, 1989). In terms of surface creation, one small error may not be critical or may be easily noticeable as a mistake, though there is a danger that:

a) the resultant change in surface (or boundary) is critically erroneous and / or
b) the mistake is not noticed.

Precision in the data sources that make up the basis for delimitation can also be fraught with uncertainty. For example, differences in provenance, or currency in data sources can contribute to a kind of inherent latency that is itself a source of uncertainty. In a specific instance, the two sources that made up the case-study of the town centres project – the ABI and the VOA data – were from different years. So data for the same postcode could relate to different businesses, yet are treated as being a single source.

Further to this, as mentioned before, the use of postcodes as spatial references may be in itself a source of uncertainty (Gatrell et al., 1991, Raper et al., 1992). Unit Postcodes are most frequently depicted as points, but are in fact best described as being a collection of address points in a specific route. The centroid of each route is what we know as a postcode point. It is often convenient to create either polygons (using Theissen polygons) from this centroid or to interpolate a surface from them (Boots, 1986). This relies on the centroid of a group of points being the most accurate manner in which to apportion attributes. It would seem that there is a serious level of doubt about whether this is an appropriate thing to do or not.

There remains a conflict between the need or desire for accuracy and true reflection of retailing and town centres and that of non-disclosure. The act of using a smoothing surface and indexes can be justified in terms of ease of use and maintaining privacy, but any measure that ultimately changes base data by smoothing or interpolating unknown will be a strong source of uncertainty. Aside from the dangers of mistakes or errors inherent (Blakemore, 1984) in the data collection or data system, there remains the possibility that someone would use or create boundaries to achieve some objective, other than the one that was initially intended. Hidden agendas, or perhaps more politely, other agendas, are a part of any political system and there has always been the potential for boundaries to be changed or created to serve some purpose other than for the greater good of the population. The classic example of this was Elbridge Gerry's famous carving up of Essex County, Massachusetts though Griffith notes that there were several earlier cases (Griffith, 1907).

2.3.2 Techniques for delimiting retail centres

2.3.2.1 Classic techniques of delimitation

Although not fashionable for some years, the delineation of Central Business Districts (CBD) in cities has a long history. In order to perform many kinds of quantitative analysis on cities' CBD, it is necessary (or at least very desirable) to have accurate values for the plan area of the CBD. Further to that, it may well be desirable to have a value or measurement for the shape of the CBD.

It could be argued that the golden age for CBD delimitation was the 1950s, where much work was done using similar techniques to that used in this research, with the notable difference that the earlier analyses were carried out by hand, using paper maps and people rather than taking advantage of GIS technology. The most dramatic difference and advantage of the latter approach (apart from the increased accuracy of measurement and accuracy of building location) is the ability to analyse and compare large datasets in a very short amount of time.

At what could be described as the twilight of this golden age, Davies (1959) describes 16 methods of delimiting CBD. These draw heavily from the work of Murphy and Vance (1954b) who produced a series of papers in the journal *Economic Geography* throughout the 1950s on the matter, resulting in a series of three related papers in three successive issues.

The methods are:-

1. Existing Boundaries

This method simply uses existing CBD boundaries. This can mean the existing statutory, historical or local governmental boundaries. The advantage of these boundaries is that one does not have to perform any surveying or analytical work to obtain the boundary, but the potential disadvantage is that the boundary may

not have been produced in an objective manner and so may not truly describe the boundary of the CBD. In the case of Goad (in particular Islington) the boundary at Highbury corner is clearly related more to the statutory boundaries than it is directly to the urban form.

2. The "template" method.

This is one of the methods that (although technologically very different) can be said to be similar to GIS analysis. Using a large scale case map of the city and a piece of card with a "four block" size hole in it, the card was passed over the map and when the generally accepted CBD area appears within the hole a dot is placed in the centre of the hole. Once a whole area has been covered, the dots are joined together or maybe moved to road junctions or corners of blocks and the boundary resulting represents the margin of the CBD. It is quite apparent that this technique pre-empts the use of kernels in GIS (Silverman, 1986, Thurstain-Goodwin, 2000) and remote sensing analysis to smooth or sharpen surfaces, or more specifically to create density surfaces like that used in the Town Centres Project (Bithell, 1990) .

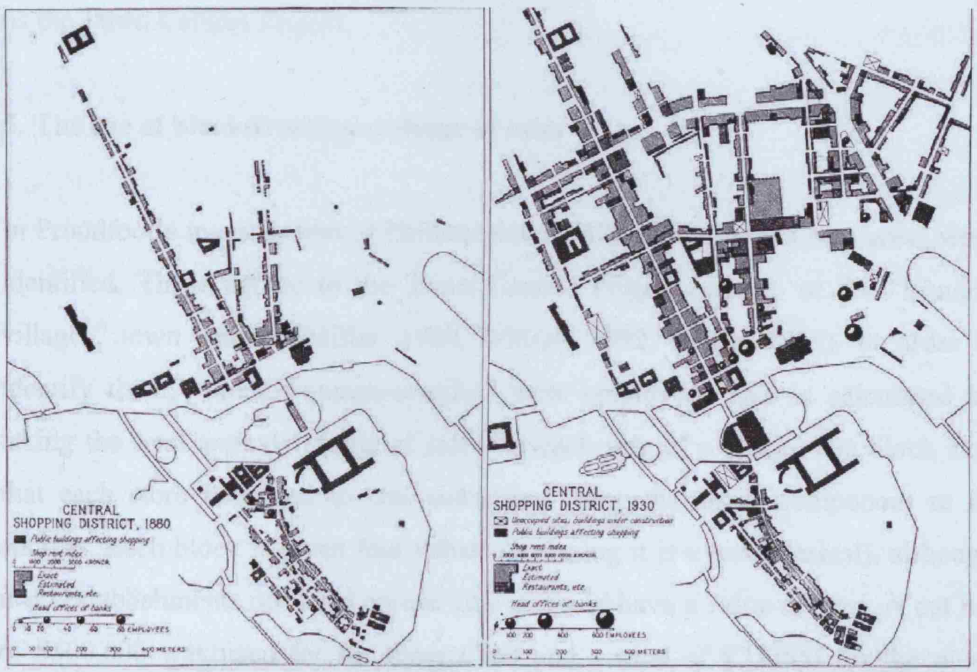

Figure 2.8: William-Olsson's shop-rent index of Stockholm (William-Olsson, 1940).

3. The shop-rent index

In his work describing the function of Stockholm's city centre, William-Olsson (1940) delimited the centre using a shop-rent index, specifically the shop rents of an individual building divided by the length of its frontage. William-Olsson drew a graduated symbol on each building to represent its value in Kroner (see figure 2.8).

4. The trade index

Following the work of William-Olsson, the trade index (or *omsetningsverdi*) was a method developed by Sund and Isachsen (1942) as a response to their not being able to secure rent value data for Oslo. Instead, they used a similar technique to William-Olsen, but used the data in a slightly different manner. The turnover of trade was plotted at right angles to the shop front. Both the William-Olsson and Sund Isachsen methods are related to modern methods of delimitation based on statistical values of retailing trade and it may well be of interest to replicate these methodologies with modern GIS tools to compare to the modern equivalents such as the Town Centres Project.

5. The use of block-frontage-volume of sales

In Proudfoot's investigation of Philadelphia (1937), intra-city business areas were identified. These equate to the Town Centres Project centres, or the "London villages" town centres (Miller, 1989, Wittich, 1992, Hedin, 1981). In order to identify them, "block-frontage-of-sales" were employed. This is calculated by taking the total annual volume of sales for each side of a block. The block side that each store belonged to was calculated using the street component in its address. Each block is given four values (assuming it is a quadrilateral), although if no establishments occurred on one side it would have a value of zero. A cut off of $500,000 was used for the inner CBD and a total of $75,000 for the outer boundary of the CBD. This method only used Retail sales and so should probably

be referred to as a Central Retail District, rather than business. Although an excellent method for describing retailing centres (Proudfoot calls them shopping centres), the fact that it does not account for non-retailing business office workers, public service and so on, means that it alone is an incomplete methodology for determining town centres. This is because the predominance of many retailing centres is more indicative of the outer lying centres of a city, rather than the classic CBD. Furthermore, it is only appropriate when the city is divided into blocks – often not the case in European cities.

6. By population distribution.

It is a truism that the population changes distinctly when one enters "downtown" or the CBD. In general it can be said that the density of population decreases, but this could apply to an industrial area or some other area within the city that is just not a residential area, such as a university quadrant. Vance (1954) suggests that by mapping census collection units (in the British sense either the Enumeration District or more recently the Output Area) and by selecting a suitably uninhabited region it is possible to delimit the CBD. It is probably more feasible to use population as one factor of a multi criteria approach as it is probably a useful indicator but only as a contributory factor, rather than an absolute.

The feasibility study of the Town Centres Project considered the use of regional population values. However, this indicator was later dropped as it was felt that the figure was not consistent or accurate enough to justify and that it did not inform the surface of town centres to a great enough extent.

7. The distribution of dwelling units.

As the previous point shows, the population changes character and distribution as we enter the CBD. Buildings classed as residential tail off significantly to be replaced with what is considered a typical CBD mix – that of high employment finance, retailing and civic buildings.

8. Patterns of employment.

The level of employment within the retailing sector is, not surprisingly, a major tool in determining areas which can be considered the "downtown" or retailing centre of a city. It stands to reason that if most of the employees within a defined area have a primary occupation within the service industry, then that area can be considered a high retailing area. Although not strictly the same, it can be considered to perform many of the same functions and occupy largely the same area. The Town Centres Project considered employment as one of the main factors of determining "towncentredness". By drawing up ratios of the kinds of use and ratios of employment types within a block or building then statements can be made about not only that building but also the area that those streets fall within.

9. Pedestrian counts.

As discussed earlier in the chapter, recent work in recording, quantifying and modelling pedestrian flows has had a great input into understanding shopping activity within retailing or town centres and the impact on the design of stores and retailing centres, as it has on planning in general. The use of pedestrian flows is an interesting and viable input to delimitation in that one of the things that make a CBD work is the flow of pedestrians. This is more relevant to retailing centres, in that with few exceptions the act of shopping requires the consumer to walk around the centre. The techniques described in Murphy and Vance (1954b) are simple enough; a series of pedestrian counts are taken across the general area and the minimum counts can be considered to be the extent of the CBD.

The drawbacks are that pedestrians may be on the street for reasons other than to shop or visit the retailing centre (non-retailing or town centre employment, school or college, the area may be a link in a popular route between two other retailing centres) and traditional methods of pedestrian counting have been labour intensive and not particularly accurate. However, the advent of new technologies to track pedestrian flows – CCTV (Velastin et al., 2002; Lo et al., 2003) - and model the

flow through urban spaces (Kitazawa et al , 2003; Batty, 2001) has allowed us to really step-up the use of pedestrian flows to input into the delimitation of retailing centres.

10. Traffic flow study.

As with the fabric of buildings and job types, the nature of traffic flow is different within the central business district of a city than the suburbs or industrial quarters. By collecting information about the temporal and spatial changes in traffic flow, it is possible to differentiate between different "use zones" in a city. This technique has particular potential for the future definition and classification of intra-urban regions bearing in mind the recent introduction of the Congestion Charging scheme in London. The introduction of this scheme has resulted in a constant and consistent monitoring of all traffic in and out of central London. This will allow more accurate descriptions of the changes in traffic flow throughout the city and use of this technique as part of a scheme to delimit centres. The success of this scheme and the likelihood of similar schemes being founded in other cities means that there will be an increase in detailed and extensive sources of traffic data available in more cities than are currently available.

11. Limitations based on transport studies.

By creating isopleths and travel isochrones, we can make statements about the extent and geometry of the transport structure of a city. This is a version of traffic flow technique, as above, but at a larger scale (at the scale of the whole city) and with the inclusion of all transport types, not just road traffic. With the use of cellular automata and agent based modelling this could generate surface style visualisations of the residual traffic signature of a city. As Vance states (1954) traffic flows and transport flows in general have flaws as delimiters in their own right. However, with modern multi criteria evaluations (MCEs) or weighted overlays, surfaces can be constructed that take into account numerous factors.

13. By land valuations.

One noticeable aspect of the CBD is that prices of property increase considerably within the zone. By monitoring the valuation of building space it is possible to draw up boundaries of the CBD. Figure 2.9 shows Worcester MA's CBD, as delimited by Charles Downe of the Massachusetts Division of Planning. It shows the CBD and "hardcore" as devised by 100ft valuation units, where CBD is any land with a valuation of over $300 per unit and the hardcore any land over $2000 per unit.

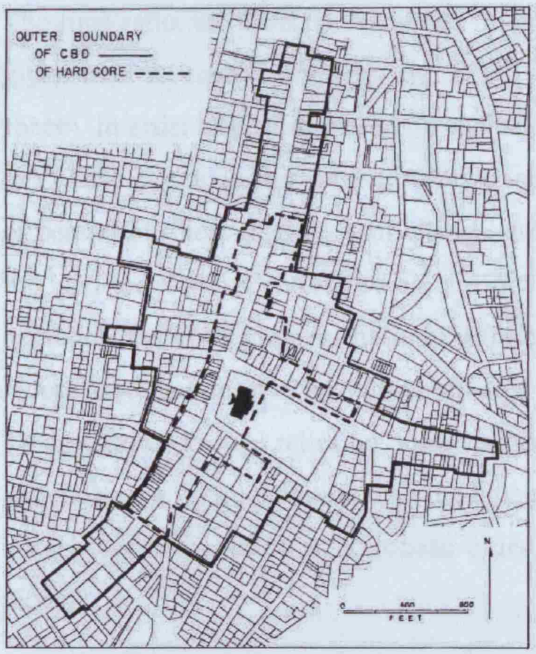

Figure 2.9: Worcester, MA. The CBD was delimited using a cut off point of value of property (Murphy and Vance, 1954b).

14. The Central Business Index of land use.

The Central Business Index of land use is described in detail in Murphy (1972). It involves the calculation and combination of three elements: the Central Business HEIGHT Index (CBHI), the Central Business Intensity Index (CBII) and the Peak Land-Value Intersection (PLVI). The PLVI is the street intersection where front-foot land values are highest. In other words it is the centre point of a CBD – the

point from which the zone radiates out from. It is commonly (in the American city) surrounded by department stores and Confectionary, Tobacco and News stores (CTN). In the pilot study of the Town Centres Project the equivalent to the PLVI is Oxford Circus in the West End – surrounded by department stores.

The CBHI is a value representing the number of floors in a building that have CBD-type uses. The figure per building is calculated by dividing the area of footprint of a building or block by the amount of space used for a central business use. (CBHI - CB use/total space).

The final ratio, the CBII, is calculated by proportion of all space in a block that is given over to central business use. (CBII = central business space / total floor space). In order to be considered for inclusion within the CBD a block or building must have over a certain value in the two indices. This is changeable, as the nature of central business districts will change, from city to city. The parallels between this and the Town Centres Project are obvious. The efficacy of an index based approach has been proven; the only difference of note is that the CBII does not record information at a resolution smaller than the block or lone building. The Town Centres Project relies on postcode geography, which is not perfect, but still generally at a finer resolution than the block. Further to that, the block may not be an appropriate measure in European cities, where it is less ubiquitous than US cities.

15. Types of establishment at the CBD edge.

One of the most interesting developments in geography, tied very closely to the advent of GIS, is the discussion regarding the spatial effect of boundaries and edges. In biology or ecology it is the edges of habitats that produce the most diverse and fecund results and so it is with urban geography. A certain mix of business types can be found at the edges of CBDs, taking advantage, in an almost ecological manner of the change between zones of business type.

16. Visual impression in the field.

This approach shares much with the Goad methodology. A surveyor or team of surveyors walks the streets surrounding and incorporating the CBD and makes a decision, based on changes in urban form on where the CBD starts and ends. The advantage of this is that objective methods may not be able to accurately identify the boundary of the CBD, as a result of incomplete data

In delimiting the CBD of Cape Town, South Africa, Davies (1959) adapted seven of these methods. It is the contention of this research that a modern method to delimit either retailing centres (called "cores" in the Town Centres Project) would follow Davies' method, but include some of the indicators that Vance listed, which were not appropriate to use or able to use.

2.3.2.2 Experian Goad – The Retailing Industry standard for delimitation and definition of Town Centre Boundaries

The Goad map is one of the most commonly available detailed planning maps of retailing centres. They have been on sale now for over 30 years and cover over 1,100 UK town centres.

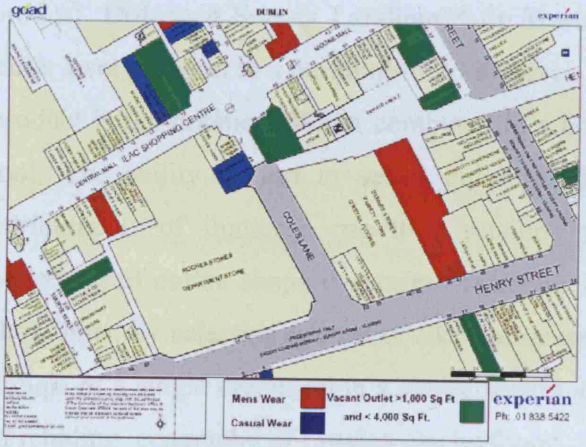

Figure 2.10: Modern Goad map

Goad maps started life in the late 19th century as fire insurance maps. Charles E Goad introduced the Fire Insurance Plan (FIP) to the British market in 1885, after establishing the product in Canada (Rowley, 1984a). He was by trade a civil

engineer and his training in surveying lead him to create a series of highly detailed urban maps for insurance. The maps detailed distance to water, fire insurance marks, combustible materials and most importantly whether a building contained valuables. The maps were never sold but rather rented to the fire departments, in order to limit their distribution (Rowley, 1984a). The Goad Company continued to produce fire insurance maps until 1970 and now is famous for supplying detailed maps of city and town centres, primarily for retailers, under the new owner of the company, Experian.

In their current incarnation they provide a footprint of each building in a town centre with its principle use and fascia. They are updated roughly every two years by surveyors who visit the town centre in question and record the fascia and primary activity of each building considered to be within the town centres. The decision as to what is or is not within the town centre (in other words the extent of the delimitation) is either a continuation of existing boundaries or is decided by the surveying team. This results in very detailed and clear maps of centres of retailing, which are considered by the retailing industry to be of enormous use.

For small-scale decision making, such as picking a site within a town centre, these maps have proved invaluable in the retailing sector and there is no real alternative product. Ordnance Survey Landline™ or Master Map™ data does provide the same level of detail at a building footprint level, but the "value added" part of the product is the notation. When combined in a GIS format this makes a powerful tool. The ability to sort or select building address delivery points based on attributes is of immense use to a retailing planner. The investigation into clustering of coffee shops is a prime example. The images in figure 2.11 a & b show how, by selecting groups of like businesses (using the primary activity) or groups of a single organisation's stores, distributions of stores and understanding of retailing geography of London can be found.

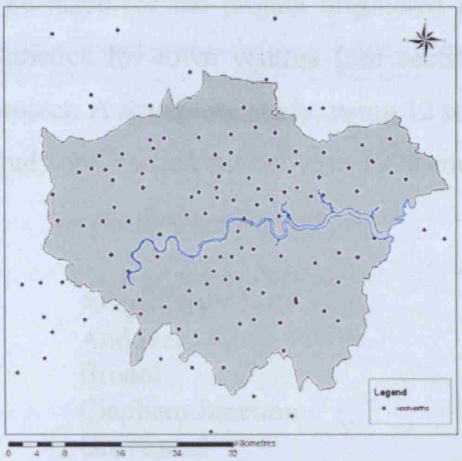

Figure 2.11a: Distribution of Woolworths stores

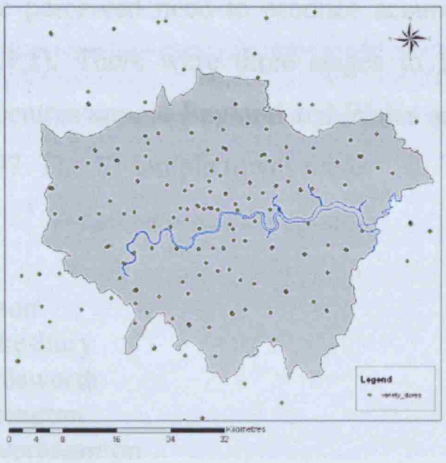

Figure 2.11b: Distribution of Variety Stores

There are however some issues of a lack of consistency and objectivity with the survey team methodology in that one team of surveyors may have different priorities or understanding to another team and so may include or discard buildings or blocks in one town centre that would not be the case in another. Furthermore, the decisions as to which localities are surveyed (or not) is driven by a combination of consumer demand and historic decision. So it is likely (probable even) that town centres will exist that should be considered large enough to delimit, but will not exist in Goad because either they weren't surveyed before or no-one has asked for them since. In conclusion, the major criticism is that this method is subjective across all levels. It neither selects sites to survey in an objective manner nor delimits them objectively.

2.3.2.3 The UCL Town Centres Project – A description of the production of town centre boundaries for statistical output.

The UCL Town Centres Project is a CASA originated project, now run by the Department of Communities and Local Government (DCLG). The intention was to improve the quality of and access to statistics for town centres, in particular about retailing. In this respect it can be said to be the government's answer to the demand from the retailing industry for a return of the retailing census.

The drive for the project originated in the perceived need to produce accurate statistics for town centres (see section 2.1.1). There were three stages to the project: A feasibility study, using 12 town centres around England and Wales as a study and carried out between 1996 and 1997. The 12 sample towns were:

Abertillery	Skipton
Andover	Tewkesbury
Bristol	Wandsworth
Clapham Junction	Warrington
Gravesend	Wolverhampton
Putney	York

The next stage was the London pilot study, which ran from 1997 until 2002. It is this data that this research will seek to evaluate, through a sensitivity study.

The Town centres statistics look like a concise version of the Census of Distribution sheets, in that they provide much of the same information. Data about floorspace, turnover, sector and staff can be found in both. In fact, the reason and justification for a sensitivity study is precisely for this reason: that the Town Centres Project methodology has the potential to become the governmental standard for reporting statistics concerning town centres (Department of the Environment Transport and the Regions, 1998).

The most apparent change or improvement the Town Centres Project made was in the representation of the town centres boundaries. A major flaw of the Census of Distribution was that the town centres were represented as a point on a map. It is therefore almost impossible to know where the study starts or ends and what areas are considered to be part of, for example, a city like Bristol (Department of the Environment Transport and the Regions, 1998).

The Town Centres Project used a kernel density technique to interpolate surfaces of "town centeredness" from data from two government surveys, georeferenced to postcodes (Ripley, 1981). This technique had been put forward to be used with socioeconomic data and governmental data for policy making for some time (Bracken, 1989, Bracken and Martin, 1989). The surveys were the Annual

Business Inquiry (Partington and Mayell, 1999a, 1999b; Partington 2000, 2001) and the Valuation Office Agency Commercial and Industrial Floorspace Statistics Database (referred to in this work as the VOA from this point on). These surveys cover the same kinds of data as the Census of Distribution and are required of businesses over a certain size (Bruhns et al., 2000, Brown et al., 2000). The surface was created by extracting information that was considered indicative of town centres – things like a level of diversity in job types and key primary activity codes like retailing (Thurstain-Goodwin and Unwin, 2000).

Having created a surface of town centeredness, a key contour was selected to signify what was considered a town centre. Anything above the contour was included and anything below excluded. The next stage was to identify the town centres that the survey picked up, label them in a GIS and provide statistics for each centre. These statistics would automatically censor any information considered to breach strong disclosure ties.

The similarity between the Town Centres Project and the Census of Distribution is apparent. Both report the same kind data in a tabular form about town centres. The differences are that the Census of Distribution does not give a boundary to the town centre, although the accuracy of the boundaries of the Town Centres Project should be questioned. The fact that it uses postcodes to georeference the data introduces a distinct level of uncertainty (Gatrell et al., 1991, Raper et al., 1992, Keykhah, 2002). Another difference is that they focus on two different concepts; that of the retailing centre and town centre. Although at this stage the criteria for defining either appears to be the same, future work in the definition of retailing centres will need to focus distinctly on retailing .

The purpose of the Town Centres Project was to find a methodology that consistently:

a. defines what a town centre is and

b. devises a geographic based medium to output statistics for town centres in a consistent way

The intention was to provide a basis for comparable statistics of town centre health for every town centre in England and Wales. In order for this to be achieved a boundary of each town centre must be created, using a standard and consistent methodology (DETR 1998). It is used to report statistically on the health, diversity and distribution of services in the UK. It differs from the Goad maps in that it is produced statistically and objectively. The key advantage of the Town Centres Project is that it is totally impartial. This is important as boundaries (for example gerrymandering) can be changed or influenced in order to serve a purpose other than that of common good. Of course, the advantage of an objective approach means that mistakes of selection or method are ruled out (as opposed to deliberate changes).

2.3.2.4 Censuses of Distribution 1952 to 1971

In the post-war era the primary means for measuring the distribution and health of retailing was the Census of Distribution. Over time the details of collection vary but essentially the same broad information was collected, namely:-

1. number of shops
2. turnover
3. employment
4. floorspace
5. capital expenditure

These data are broken down by whole region, sub region, towns with a population greater than 20,000 and towns smaller than 20,000. They are also broken down by multiples, independents and cooperatives societies.

In the 1971 Census of Distribution, the retailing activities are divided into the groups shown in table 2.3 below.

Perhaps ironically, the demise of the Census of Distribution roughly coincided with the advent of GIS, which now provides the tools and techniques necessary to analyse the data. The tying of data (aggregate or disaggregate) to points in space is essentially what a GIS does, the only problem with regard to retail centres as it stands is that the area of town centres is not defined. For example, in the south west region (one of the smallest Census of Distribution groups) there are nearly 200 town centres identified, each with around 400 records. Although each town

cannot be modelled, at a regional level, surfaces could be produced or graded symbols used to chart the patterns of certain retailing activities across the region.

TOTAL RETAIL SHOPS
Grocers and provision dealers
Other food retailers
Dairymen
Butchers
Fishmongers, poulterers
Greengrocers, fruiterers (including those selling fish)
Bread and flour confectioners
Off-licences
Confectioners, tobacconists, newsagents
Clothing and footwear shops
Footwear shops
Men's and boys' wear shops
Women's and girls' wear, household textiles and general clothing shops
Household goods shops
Furniture and allied shops
Radio and electrical goods shops(excluding hire)
Radio and television hire shops
Hardware, china, wallpaper and paint shops
Other non-food retailers
Bookshops and stationers
Chemists, photographic dealers
Cycle and perambulator shops
Jewellery, leather and sports goods shops
Other non-food shops
General stores
Department stores
Variety and general household stores

Table 2.3: Groups in the 1971 Census of Distribution

The need to understand the retailing environment is highlighted by the increase in qualitative models of retailing and consumption (Langston et al 1995, Wrigley & Lowe 1996 etc) and founded on an increasing awareness of the economic importance of the retailing sector. The census of distribution fulfilled a need (a need that one could argue still exists today) to quantify and categorise the health and distribution of the retailing sector.

Indeed, one of the main objectives of this research was to investigate the potential of filling the void left by the Census of Distribution. With this in mind it is useful to know why the "retailing census" is no more. The reasons for the demise of the Census listed in Moir & Dawson (1992) were:-

i. The amount of time taken to fill in the forms. This impacted not only on the productivity of the businesses themselves, but on the production of the report books. It was shown that in many cases only an official enquiry would generate an adequate response rate (Sparks, 1996).

ii. The delay in producing the report of each census. For example the last volume of the 1971 census did not appear until 1977 – the change in economic climate between these two periods being great enough to make the report practically obsolete.

The arguments against the reintroduction of the Census of Distribution in the 1980s were that if the data were truly useful to industry then market forces would result in the private sector filling the gap. (Rowley, 1984a) suggests that the Goad map does just this, but there are serious issues of coverage and selection (Sparks 1996). Although the Goad maps have become a powerful tool for retailing location analysis and have remained dominant for nearly 40 years, there are still questions about the methodology in terms of extent, currency and coverage (see section 1.3). Sparks (1996) notes that the downfall of the Census of Distribution did not go unopposed and states that there was in fact a great deal of tension between government and retailers.

The main flaws of the Census of Distribution are: -

Currency. Despite requests from the retailing sector (in particular the Demographic Users Group) for the reintroduction of this census, the government has been reluctant to do so. As a result the most recent census we have is over thirty years old.

Aggregation. The data are aggregated to the level of town centres themselves, which are represented spatially as points.

Disclosure. In order to protect the individual businesses, if the number of business types fell below a certain threshold the data was not disclosed.

Consistency. Although this could be considered a flaw of government-collected statistics in general, the lack of consistency in terms, definitions and collected statistics from year to year make objective quantitative analysis more difficult.

2.4 Conclusion to Chapter Two.

In summary, in the modern retailing world we are not limited to only internal data sources, but can choose between a mix of public and private sector sources, and depending on the circumstances the organization may be able to add its own data. With the power of statistical and GIS tools and the unprecedented levels of computing power now available, a mix of sources to provide an understanding of the retailing environment, both supply and demand, is more than achievable. Having reached such a stage, it is important to bear in mind the levels of imprecision, accuracy and uncertainty in the existing models, and in the creation of future models, and give serious thought to the methodology of delimitation of centres for statistical reporting. As it stands, the methodologies are adequate, but not ideal; they are misunderstood and difficult to manipulate, but most importantly they do not match up. There are still cases where one methodology will describe a centre and another will not, or clear retailing centres that are not picked up by either methodology.

Chapter Three: Interviews with retailing professionals

This chapter will provide the second half of the knowledge base for the project, which is intended to provide a solid intellectual structure within which the analytical work is to be grounded. There is a discussion of the division of the work between knowledge base and analytical work in section 1.6 (see fig 1.1, Page 7 for description of thesis organisation).

As described in chapters One and Two, retailing is a vital component of the British economy, yet it is something about which we do not have adequate data. The industry itself is pressing for changes in the provision of data about retail centre health (and as a component of that, the delimitation of those centres), through lobbying groups such as the Demographic Users Group. This chapter will attempt to provide evidence of retailers' attitudes to the use of technology in retailing, particularly spatial technology.

Some of the work undertaken in this research has already been published, and included within this chapter can be found results and sections from the report delivered to the EPSRC in partial completion of the project "The Retail Systems Environment", 2001-2002, and also in Chapter 11 of Longley & Batty, 2003. Advanced Spatial Analysis: Strategies for integrated retailing management using GIS. The EPSRC project was intended to investigate potential uses for Complex Systems Theory (Adams et al., 1987, Allen, 1997) within the retailing industry. The intention was to investigate industry opinions and beliefs and then recommend further research into the production of techniques and products to bring non-linear approaches to retailing. This in turn is part of a larger project with the intention of transferring non-linear and fractal techniques and expertise from academia to industry (Duckham and Drummond, 2000, Mandelbrot, 1967).

3.1. Objectives of the interviews

The interviews conducted in this research provide a unique insight into the perception and understanding of spatial aspects of retailing in the UK.

Overall the objectives of this part of the project were to:

1. Identify key retailers that fulfil the criteria set out in the initial stages of the project. Also identify the decision makers within such retailers who would be most relevant to the study.

2. Contact these retailers and conduct a pre-interview study. This would allow us to tailor the interview to cover certain themes that the interviewer had intimated.

3. Conduct a two hour interview with decision makers in the 'data to information' role. This means that the interviewees are primarily concerned with the acquisition and compilation of attributed data, with a spatial component. For example they may be decision makers concerned with shop location or customer distribution, with a view to exploiting that distribution for improved sales.

4. Analyse the data gathered in the interviews and compile in a tabular format.

5. Derive common themes from the interviewees and provide some feedback in the form of research themes that represent areas in which focused further research would be of benefit to the companies, but also lies within the expertise offered by CASA.

6. Deliver these insights to the retailers with a view to gaining their cooperation in the future in terms of time, money and data. These themes are described later in this chapter, and are of interest in terms of further questions posed by this research, rather than answers to the questions given. The themes of future research are also referred to in Chapter Five.

7. Use the insights gained at all levels, to reach some conclusions concerning the hypotheses described in Chapter One.

3.2 Method

The chosen method for this project was to:

a) choose the most appropriate retailing companies and staff
b) carry out recorded interviews
c) show them the conclusions drawn from the interviews and, then
d) based on their appreciation of said conclusions, prepare four clear research themes.

Although the research themes identified and described in section 3.7 of this chapter are only of interest in the context of this research in terms of what further research they may suggest, the exercise was of great importance to this work as it provided a "ground truth" of industry understanding that was not available through academic sources.

These four research themes would represent what was desirable for both academia and industry to investigate; in essence what's missing from the retailer's toolkit at present. This approach used to determine these themes is shown in Figure 3.1.

A critical concern at the outset of the project was that as full a range as possible of retailers in the UK should be interviewed. In order for the results of the interview to have any meaning at all it was vital that the retailing industry was considered and a broad coverage of retailing found. One method of defining types of retailing activity was to use the 1971 Census of Distribution's classes of retailing (section 2.3.2.4, table 2.3). However, it was considered that this was not an accurate description of the current types of retailing – for example, with the advent of the ubiquity of supermarkets, specialist shops such as green grocers have declined a great deal and as such do not truly represent a significant force within retailing.

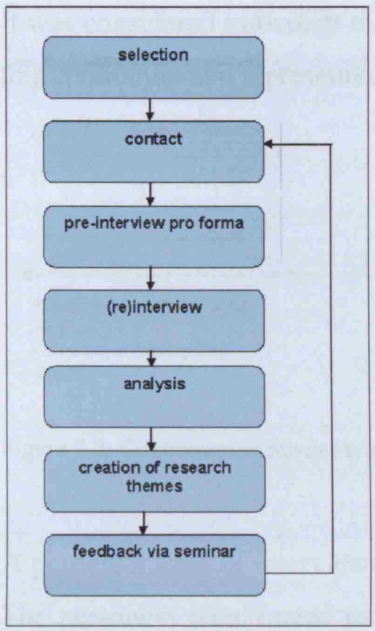

Figure 3.1: Methodological structure of the interview process

Instead it was decided that a less structured, more general classification was required, specific to this research.

In order to achieve this, a continuum was drawn showing retailers that cover what we considered to be a full range of potential retailing activities. This spectrum ranges from financial packages (where the product itself is intangible and abstract and where the relationship between retailer and consumer is key), to supermarket chains (where product and store layout are considered to be greater attractors than a relationship with the retailer). It should be said that we do not consider "relationship" at one end of the scale and "product" at the other as overriding in entirety - rather that one is considered to be more relevant than the other to the retailer.

It was of interest to find where in a cycle of influence each company felt it sat. This cycle is shown in Figure 3.2 and demonstrates how a company may influence shopper behaviour – by loss leaders, special offers or the artificial creation of "fads" – or how consumer behaviour affects corporate behaviour – companies responding to changes in fashion, taste or just adverse reactions to "bad" products.

It was considered important that the companies we selected somehow fitted along this continuum and represented as full a spectrum as we could find.

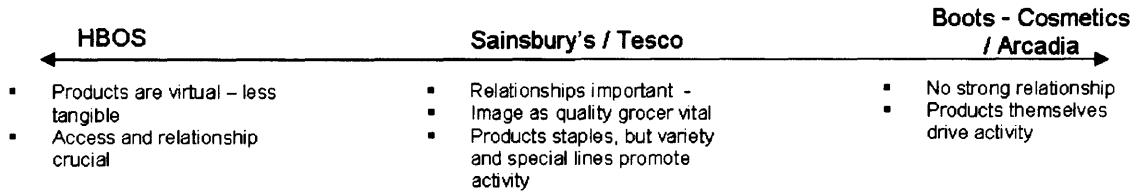

Figure 3.2: Continuum of retailer types

A particular kind of interviewee was required to fully elicit the required response. The personnel would need to be in a position involving the transition of data to information, and then to strategic decisions, preferably with a GIS or spatial analytical background. With this in mind, it was decided that members of the Demographic Users Group (DUG) would be an ideal source. The DUG lobbies government on behalf of the retailing industry for improvements to the quality and access to national demographic datasets. It follows therefore that the members of such a group are in apt companies (and appropriate positions within those companies) and aware of GIS and geodemographic techniques.

It goes without saying that the structure and needs, let alone philosophy, of retailing organisations will be specialised and therefore not standard. This was however not seen as a disadvantage. Following the logic of the company selection exercise, the viewpoints of key personnel from varied points along the continuum shown in Figure 3.2, provides this research with a wider perception of the industry.

3.3 Designing the interview structure

In order to gain as much as possible in the relatively short amount of time spent with each interviewee, a clear plan of the interview itself, as well as the capture of responses, was necessary. An abridged version of the form is shown in section 3.4.1. There were key issues that it was considered important to investigate, and these are discussed in the following section.

3.3.1 Monitoring the environment

It was of interest to understand how the organisation understood the environment. For example which elements would be regarded as important – transport infrastructure, customer databases, MOSAIC breakdown of hinterland for instance – and which factors were not considered important.

There was an issue as to the extent that the environment was measured at all, and as to whether the organisation considered itself to be in a position where it was successful or powerful enough to take an action, and then allow the environment to react to it.

Specifically the project was set up to find whether the monitoring and understanding of the "retail environment" was a spatial or a demographic phenomenon, or whether perhaps it was a combination (geodemographic). It was also of interest to see how the data was recorded, whether this was done in-house or by an external agent, and whether a particular department within the organisation collected and compiled the data.

This in turn lead on to a series of questions about how the data was stored – whether in a GIS-type repository or database, or even paper records – and what steps were taken to ensure the currency and relevance of data. This is the equivalent of what, in a GIS repository, would be called "metadata". Further to this it was of interest to see whether the organisation bought data (either to transform it itself, or to leave it unchanged), or whether it created its own data

sources. In the case of the former, there is a question of who "owns" the data – or whether it could it be reproduced under licence or even re-sold as a value added product.

As discussed in Chapter Two, the currency of strategic information and GIS data, with particular reference to the volatile and changing nature of the retailing industry, lead us to pose questions concerning temporal resolution and recording. It was of interest to know how often monitoring, updating and weeding of data were performed. In this context it was required to know which elements of the information were updated most frequently, and why. It was important to know what, if any, factors regulated the need and frequency of updates in the data and whether there was some point when the data became too old to be considered of use, and if this age was the same for all datasets.

It was required to know at what point the organisation considered that there was a sufficient amount of data and how the quality in terms of accuracy, precision and currency was assessed. In other words, how well, in the opinion of the organisation, did the data collected marry up to reality? With this in mind, it was required to discover whether there was any external monitoring or if all monitoring was carried out in-house. This lead on to questions about whether the data provided by (any) external organisations was delivered in raw or processed form.

With reference to Figure 2.2, the division between public sector and private sector data sources was of interest. For example, what was the ratio between the two sources and which was considered to be more useful by the organisation? Finally we wanted to understand to what extent the organisation itself contributed to market intelligence – did it factor in its own sales and performance data to environmental models. If this was the case, the same questions applied as above – what sort of data, resolution, accuracy, auditing and so on.

3.3.2 Detecting and understanding change

In order to monitor change in the environment, environmental remote sensors use data sources to monitor "step changes" in datasets – i.e. when some event occurs which is significant and out of the ordinary. Continuing the environmental analogy, we were interested to know how these kinds of "step changes" were detected. It was also of interest to know at what level of detail they were recorded. This would provide some insight into the processes put in place by retailers to identify and react to change. This is a key component of the objectives of this part of the project in that it concerns the use of data and spatial theory in terms of supplying a retail demand at one or more locations.

For example, Customer X has just bought nappies for the first time – is he a father and how can we tailor our service, perhaps in the form of vouchers, to retain or improve his custom? Having accepted that we need to detect changes, to what level of sensitivity does the organisation operate? It was of interest to know what represents a "change" to an organisation, what level of change is deemed significant and how this is monitored.

A common phrase in GIS literature is that of "turning data into information" - the act of converting raw data – values of store turnover or customer spending – into meaningful information that can guide policy and inform the organisation of the true state of affairs in either the supply or demand domain. It was of importance to understand what processes the organisation went through to make that change from data to information (e.g. which software tools, procedures were in place? Were complex simulations or predictions used, or were all decisions based on historic data?).

Further to that it was necessary to understand how the organisation felt that this meaning was truly understood at a wider level within the organisation. In other words, was the transition from data to information a universally understood message or an arcane element, known by only a handful of adepts?

Having collated and attributed meaning to data, the organisation must then be confident that this represents a model of reality that is reliable enough to plan tactically or strategically. If this is the case, then it was of importance to know how the environment was checked to make sure that the predictions or modelling was correct (enough). If prediction is performed (in the case of extrapolation of data) then it was desirable to know what (if any) tools were used or if this was out-sourced. Whatever the answer to the above, issues of who owned answers and tools was an issue.

Finally, if we accept that change is about the only thing we can rely on to occur, it makes sense to state the environment will evolve, and even change itself must change. So, it was necessary to know what measures were in place to respond to the whole change and environmental monitoring set-up when new understandings came to light. In the words often attributed to the economist John Maynard Keynes, "When the facts change, I change my mind. What do you do, sir?"

3.3.3 Development of initiatives and responses

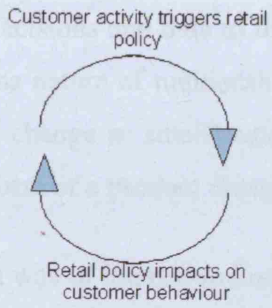

Figure 3.3: Cycle of influence in retailer / consumer behaviour

Figure 3.3 demonstrates the cycle of influence in retailer / consumer behaviour and this relationship. The question of "stimuli and response" (a retailing "chicken and egg" question) was one that had interested the research from the beginning of the project. With that in mind, this research set out to investigate the nature of initiating change and responding to change in the organisations. The best way to start off was to try to quantify the ratio of proactive initiative – i.e. the act of trying to change consumer behaviour through new products or different selling

initiatives for existing products. (Product in this case is meant to signify anything from an individual line all the way through the scale to a corporate brand). This is fundamentally about data and space, and a number of strategies could be employed to incorporate the two. The objective of this part of the work was to determine how each retailer organised data regarding the stimulation of change in consumers, and response to change by consumers.

Presuming that organisations both try to steer the market and react to it, it was of considerable interest to know the role that data and spatial analysis plays in this activity. It was of interest to see whether the two acts were considered to be as important as each other (regardless of the proportion of time spent in either activity) or whether the organisation saw itself primarily as a leader or responder.

Assuming that initiatives and leadership play a role in the organisation, it was of interest to discover how these initiatives were created, by which agencies within the organisation and what role (if any) data played in the decision to adopt a particular initiative, or even if data played a part in the conception of an initiative. This lead to a series of questions regarding the role of spatial or locational decisions and data in the formulation and practice of new initiatives. Considering the nature of multiscalability within retailing, a spatial decision could encompass a change as small-scale as a store layout change. The change may also take the form of a product change, therefore a non-spatial one.

It was of interest to know to what extent (if any) the retailers shared or cooperated with other players in the market. It was desirable to see what was exchanged or shared and how this took place – for example some kind of mutual data drop – and whether there was a resulting interoperability issue.

In addition to the three main groups of questions listed in section 3.4, there was a section referred to in this research as "meta questions". These questions concerned the mental model or conception of the retailing environment that the retailers had. This had elements of "multiscalability" with questions asked about the (understanding of) the structure of the organisation itself and whether this differed

from the corporate model, which in turn lead to a larger question of how the organisation understands the retailing environment holistically.

3.4 Interviews with retailing organisations

The key approach to the interviews themselves was to create a relaxed and informal atmosphere. It was made clear at the outset that any information given to us would be treated in confidence and that CASA had a tradition of dealing with sensitive and confidential information. The interviews were carried out between March 2001 and September 2001 either at CASA or in the offices of the organisation.

The proforma discussed in section 3.3 was followed loosely, but as the intention was to keep the interview informal, the questions were not asked exactly as on the sheet but instead followed the format of an informal conversation, steering the respondent towards the issues required to be covered. Having gathered material during the interviews, the notes were studied and a detailed profile was produced for each retailer. This information was compiled in tabular form, so that worries, perceptions and approaches to problems could be compared.

From this tabular dataset, conclusions were drawn about the retailers' intentions, concerns and desires and as a return for their time their answers were consolidated into recognisable themes of future research. The intention was to use our insight into their perception of the environment and our unique position to prescribe spatial work that could be carried out by CASA (or academia in general). This work was divided into four research themes which are listed in section 3.7.

The feedback of our conclusions was carried out in the form of a seminar, held at UCL. The retailers who had participated in the interviews, along with academics and others from the industry were invited, and a series of presentations made about our research findings, together with ones on research into the field in general.

The following section contains the structure of the interview.

3.4.1 Interview structure

Monitoring the environment

- What does the organisation regard as the key elements of its environment? What are the key issues? Changes in what domain are deemed worthy of note? Specifically,

- how are customers and potential customers identified?

- what attributes of consumers or their behaviours are monitored?

- how are needs identified? *(it was of interest to see if this was done on a spatial or demographic basis)*

- How are these aspects of the environment monitored? By whom? How is the data recorded? How is it disseminated in the organisation? Who 'owns' the data?
- What is the temporal resolution of the monitoring? How often is monitoring updated? Which elements are updated more frequently and why? What sets the frequency of update?
- How is demographic or spatial data related to all the other possible dimensions of information?
- How is data quality assessed? How is the necessary data volume threshold set (how do you know you've got enough)?
- How good is the match between the key elements of the environment and the monitoring process? *(we were interested to see if monitoring was done independently regarding different aspects, or whether there was an integration process across different aspects.)*
- How much monitoring is done by external organisations / bodies? Do they provide raw data or interpreted meanings? Are their findings validated? How?
- How much monitoring is done in collaboration with competitors, suppliers, or partners? Specifically, what could you use from collaborative data collection, e.g. a retailing census?
- How much monitoring could be supported by government sponsored data collection? Specifically, what would you like to see as part of census data collection?
- How much environment monitoring is done by reference to internal data sets of data collection activities? Who sets the agenda for these? Specifically, how do you use your own sales (or loyalty) data?

Detecting and understanding changes

- How are events 'out of the ordinary' detected?
- What is a 'significant' change? (and how consistent is the understanding across the organisation)*(we were interested here to see if there was a consensus within the organisation on how early you need to detect changes, and what sets and influences this consensus.)*
- How are the implications of data from the environment assessed?
- How is meaning added to data? By individuals, by teams, corporately?
- How explicit is the added meaning and how well is the addition of meaning understood?

- What tool support is there to underpin the development of interpretations of the world? (e.g. data management, simulations, decision support, histories) *(we were seeking within the responses whether there was an explicit process by which the environment is checked to confirm hypotheses about meaning and implications).*
- How much extrapolation is done about implications? On what basis and with what tools? Who 'owns' the process? Who 'owns' the answer?
- What 'touchstone' or basis (such as an espoused strategy) is used to evaluate the implications of change?
- How is environment monitoring modified in the light of new understandings?

Development of initiatives and responses

- What is the proportion of activity between proactive initiative and reactive responses? (i.e. is data gathered as above to underpin initiatives? Are initiatives and responses viewed in the same light?)
- How is the direction of initiative or response chosen? Specifically,

- what initiatives (or responses) might appear as store location or format decisions?

- what initiatives (or responses) might appear as product mix decisions?

- how will the spatial or demographic aspects be managed?

- How are options for action generated?
- How are trade-offs made? (For example on pricing, promotions, store formats, store locations)
- How are options chosen?
- Against what criteria are options selected?
- How is feasibility assessed – acceptability to a market (or other stakeholders) capacity to deliver?
- How are initiatives or responses developed into existence? (Ownership? Leadership? Process? Management?)

Launching initiatives or responses and monitoring impact on the environment

- How are launches managed? (Ownership? Leadership? Process? Management?)
- Was there another check of environment before launch?
- Post-launch, how are initiatives / responses managed?
- What aspects of the environment are monitored? Who determines those aspects?
- How is monitoring conducted? By whom? How is data assimilated?
- What is done with post-launch data? Who uses it? For what? *(we were interested to see if such data (or information) was fed back to the people initially tasked with monitoring the environment)*

'Meta questions'

At later stages in the discussion we should have enough information to enable us to ask more sensitive questions about more fundamental issues. These questions and issues may arise anywhere through the discussion and should be pursued as far as they are meaningful and helpful.

The organisation's model of its world

- What is the mental model of the world that tells the organisation what it should regard as the key elements of the environment? *(we were interested here to see if there was any difference between the model and the corporate strategy. Or are they so closely intertwined as to be indistinguishable?)*
- How dynamic is the model - does it change over time or is it relatively fixed?
- How well does the model cope with change and dynamic - does it relate fixed parameters or is it able to cope with changes and trends?
- Who holds that model? How explicit is the model?
- How is the model expressed and disseminated?
- What happens to data or the model when they conflict?
- Was data ignored, the model refined, both or neither?
- How might the model change (or be changed)? Who could be seen as responsible for such a change?
- What might be the conceivable impact of changes to the world model? How would such changes be handled?

The organisation's understanding of itself

- How well does the organisation understand itself, its capabilities and resources, preferences and typical behaviour?
- How is this self knowledge (in each of the different dimensions) gleaned and then kept current?

3.5 Issues of spatiality in retailing raised by the interviews

The following section contains a review of the interviews conducted with retailing professionals. General trends and incidences of agreement or disagreement amongst the retailers in key themes have been identified and presented, split into three themes. These themes are *demand*, *supply*, and *organisational structure and analysis*. All of which can be said to reflect the core themes of this chapter, which involve the collection and application of data concerning retailing that may have some bearing on the structure and composition of the high street in town centres.

3.5.1 Demand: Demographics and consumers

At the clothes retailer end of the market, there is a strong interest in modelling and understanding the way that the supply end of the market changes through space and time periods of 5 to 15 years. This 15 year period appears to be a constant, with both the financial and the department store representatives echoing that sentiment. It would seem that the retailers see this 5 to 15 year period as significant, as it appears in all of their answers to the survey. The suggestion is that this timescale is important as a key to success, in order to be able to predict how markets and communities will change in the future.

How the movement of customers affects shopping is of great concern. The fact that shoppers may well be making shopping trips tagged on to other journeys, or away from home means that traditional hinterland (geo) demographic studies are less influential. Rather than a static descriptive model of demography, many of the interviewed retailers are now more interested in psychological tendencies of consumer groups – such as expectations of product, brand or company. Matching expectations of rivals' performance, or a company's own performance to success is a becoming a key concern.

Interest in smaller-scale interactions is widespread. Rather than a traditional approach to locating and stocking stores, where the emphasis is on larger scale hinterland communities, work on how customers interact with products at a store scale (or even aisle scale) level are seen as being key. It is still an unknown to some extent how to quantify this and how these kinds of interactions can be placed within a scale continuum.

There is considerable interest in journeys and movement of consumers. As the static hinterland approach to modelling consumers becomes less influential, interest in trip types, store types and location of stores is a major research area. There is a universal acknowledgement that there are modes of shop – trip types – and that not enough is known about them. However, it is a widely held opinion

that customers have "learnt" to shop in store types appropriately. The introduction of "metro" or "hyper" stores was initially to respond to perceived customer demand, but has ended up influencing the way that consumers shop. As a result, the interaction between customer (and shop type) with store (and store type) (see Bruhns et al., 2000) is considered to be a major field of investigation for the future and of great importance in understanding and modelling the "demand" side of the retailing equation. What retailers do agree upon is that they would like to know more about the objectives and expectations of trip types and journey types.

Finally there is a consensus that there are at present too few methods for quantifying components of a retailing interchange with consumers. Factors such as service, shopping environment and other intangibles will need to be understood and put into some kind of quantitative framework in order that something approaching a complete framework for understanding consumers can be built. In a more everyday sense, factors such as service or environment, if quantified, could be used to build better store layouts or more appropriate product suites.

3.5.2 Supply: Location and product

Location has been a constant concern of retailers and economic geographers for the last century and the choice of location of store and what type of store is still of concern. However, the choice is becoming more complex. It is considered that the issue of convenience is now increasingly important. What this means is that locating within a town or a high street is not enough to be successful anymore, but rather the best location is one that takes into account the travel and shopping plans of the consumer by location at a convenient place. This coincides with the concept of *prime pitch* within a store (Retail Management, 2002). Mapping expectations and convenience to the physical map of retailing geography is a universal aim of the retailers interviewed.

One again scale is considered important by all of the retailers interviewed. It is considered that there is a continuum of scale which ranges from the micro scale (sections of aisles, individual products) moving up the continuum through stores, sections of streets, retail centres, towns, regions to global systems. One could even state that the Internet revolution has created a final virtual scale which superseded even global trends. What all of the retailers are striving to do is build models of reality that work across these scales. Everyone acknowledges that retailing interactions are different at the individual scales but mapping trends across them is exceptionally hard. For example, events or trends at a global scale must impact in some way upon a smaller scale object – such as a "metro" store – but as yet no model has been able to measure this interaction accurately.

The Internet has unquestionably changed the way in which we shop and can be considered to be the fourth stage of decentralisation from town centres and high streets (Schiller, 2001). As a result, the traditional land portfolios that national retailers have held are now thrown into uncertainty. Planning regulations continue to restrict development in green field areas and Internet technology potentially reduces the use of shops or changes the way we shop.

The representatives interviewed from the financial sector had a different perspective on property and location. The fixed costs of financial products, regulated not only by market forces, but in many cases by legislation, result in less flexibility in terms of pricing and offers. Further to that they are restricted by consumer expectation. It is perfectly feasible for a customer to shop for groceries at an out-of-town location, but for them to consider banking to be a high street based function. This trend is changing though; as trust in Internet banking increases and online products become better (for example, many banks and building societies will offer preferential rates for accounts set-up online), then more and more businesses will be performed away from the bank building itself.

3.5.3 Organisation and Analysis

One of the key issues of understanding and quantifying the spatial data aspect of retailing is the ability of the organisation to react to it. This is important because, if a company cannot react to change appropriately or within a certain timescale, then it will suffer. The key issue here was whether the companies interviewed saw more merit in a centralised or decentralised approach. In a centralised approach, the data concerning store layout, performance etc, is collected locally and then transferred to a central (head office) location. This information is then analysed and policy derived. This policy is then disseminated from the central location to the branches. The strength is that all stores can be seen to be "singing from the same hymn sheet" in that no stores can act unilaterally in a manner that is potentially damaging to the organisation as a whole. The weakness is that the latency inherent in the movement of data from location to location and the time that analysis takes may result in the second condition for success – reaction with a reasonable timescale – not being fulfilled. It may well be that the reaction is correct, but if it is too late, then it may no longer be appropriate.

A decentralised approach will give more power to the local store manager to make decisions about stock, layout or individual offers on products. The advantage is that decisions can be made quickly and local context may be extremely important in an individual case. The problem lies in whether this local decision fits in with company strategy and whether an appropriate decision can be made at the local level without taking into account national, strategic or tactical trends or policy. All of the retailers interviewed had two levels of organisation for analysis and reaction. At one level there are specialist teams who look at different kinds of data or product, rather than a central, holistic strategic centre. Typically, these teams propose specific new plans and present them to the board for the final decision. This can be considered to be the tactical level. However, as far as performance data and the strategic reaction to it is concerned, all of the retailers interviewed stated that this reaction took place in a centralised manner.

So in conclusion, many of the decision-making actions, and attitudes towards spatial analysis and data in both supply and demand are strikingly similar across the continuum of retailer types. As may be expected, the financial services sector differs in some aspects, but in many aspects shares the views of the majority of the industry.

3.6 Results of interview process

As mentioned earlier, confidentiality is of the utmost importance to the retailers interviewed and so the results at the time were anonymised and generalised in order to avoid inappropriate disclosure in any published documents. However, as this work has a limited public availability and is written some five years after the interviews were conducted, risk of any of the companies gaining or losing competitive advantage is negligible. Therefore, it is now considered to be of use that their names appear along with their description. Five retailers are covered, the broad descriptions of which are shown below:

Retailer A: National clothing and household goods chain (Marks & Spencer)
Retailer B: National pharmaceutical and mixed goods chain (Boots)
Retailer C: National supermarket chain (Sainsbury's)
Retailer D: National department store chain (Debenhams)
Retailer E: National financial services and banking chain (HBOS)

Marks and Spencer – Marks and Spencer, known colloquially as "M&S" was established over 100 years ago, and is now, by turnover, the largest clothing retailer in the UK. It is also a multi billion pound food retailer, and many of its shops sell both of these categories. In addition it sells homewares such as bedlinen, as well as financial services.

Boots - The Boots Company PLC, which is still known by many as 'Boots The Chemists', is probably the most dominant pharmacy chain in the United Kingdom. It has shops in most high streets, and in recent years has extended its business to offer one-hour photo-processing, opticians, and even home appliances in certain stores.

Sainsbury's - J Sainsbury plc is the parent company of Sainsbury's Supermarkets Ltd, a chain of supermarkets in the United Kingdom. It was once the market leader in the UK supermarket sector, but is currently ranked third behind Tesco and ASDA. Sainsbury's also has interests in property and banking.

Debenhams – Debenhams plc has a chain of department stores based in the United Kingdom. Not only a retailer, it has extended its operations to include Debenhams Finance which covers home, car and travel insurance, as well as the travel money scheme.

HBOS – The merger of the Halifax and Bank of Scotland, and the formation of HBOS in 2001 was heralded as creating a major force in British banking, capable of challenging the established "Big Four" UK retail banks. It is the holding company for Halifax plc and the Governor and Company of the Bank of Scotland. Since its creation it has grown to become the fourth biggest banking group in the UK by market capitalisation, as well as being the UK's largest mortgage lender.

The contents of table 3.1 are the results of the interviews, arranged by retailer and by common theme. A summary row at the bottom of each section of the table explains the relationship between the results of the interviews and the research themes described in section 3.7.

Description	Concerns about demographics and consumer interaction	Consumer shopping behaviour	Consumer / retailer interaction
Retailer A [M&S]	Interest in evolution of towns and surrounding demographics over time frames of 5-15 years	Different modes clearly observable. Store / outlet designed to match Shortfalls in current models of consumer behaviour re catchments areas and propensity to travel	Observe that customers have learned to use different formats in different ways Experiment with some stores as 'test-beds'
Retailer B [Boots]	Interest in changes in consumer behaviours and expectations over time and strategic response by format and category management Potential macro changes in consumer behaviour and impact of planning policy instruments	Clear segmentations of consumers shopping behaviours and by socio-economic category	Interest in interaction between format design, category management and consumer response
Retailer C [Sainsbury's]	Interest in emerging global trends in consumer behaviour Combined journeys (shopping + other) makes traditional demographics less relevant Interested in new approaches to modelling impact of combined journeys	Clear identification of consumers shopping by objective	Formats designed specifically to serve shopping behaviours
Retailer D [Debenhams]	Interest in issues not only of how competitors influence outcomes, but also competitors' impact on consumer expectations Interest in future patterns of development, changing demographic balance and consumers' mental models of the retailing environment	Wide variations observed, but focus is on building deep brand relationship rather than immediate responsiveness	Continuing philosophy of experimentation to explore new avenues Design of layout carefully coupled with less tangible issues such as service
Retailer E [HBOS]	Time frame of interest is about 15 years Interest in customer interaction relative to location decisions	Observed differences in priorities and purposes	Customisation of format and of location to match the consumers' needs. Avoid mixtures to avoid frustrating consumers
Summary	These questions relate to the meeting of customers and retailers in space. The research themes (section 3.7) they relate to are "The mobile consumer" and "Shopping the network"		

Table 3.1: Tabulated responses from retailers to the interview questions

Description	Concerns about store / outlet location	Store / outlet format design	Use of models and modelling
Retailer A [M&S]	Deep significance of changes to town centres that affect pedestrian flows, format and fascia effectiveness	Multiple formats to address different consumer groups and shopping modes	Gravity models Models of own and competitors' performance referenced to demographics
Retailer B [Boots]	Shift in focus from concerns of property portfolio to key element of marketing Deep interest in both the change in town centres and other changing patterns of use Very keen to avoid cannibalisation	Evolving definitions of formats, hierarchies and inter-relationships	Gravity models
Retailer C [Sainsbury's]	Observed increased importance in the significance of location as convenience becomes more important Questions about impact on local prices of a few key players	Established hierarchy of formats, subject to ongoing refurbishment and experimentation	Sophisticated models covering own operation, nearby competitors and considering nearby facilities and infrastructure Sophisticated modelling of features and traffic within store. Quantified evaluation of expected return from each part of store
Retailer D [Debenhams]	Issues of changing dynamics in town centres or in retailing parks of own and competitors' outlets	Experimentation with layout and content and careful monitoring of results	Internally developed models to support decisions
Retailer E [HBOS]	Location seen a key issue because fixed costs reduce flexibility Interested in increasing range of formats to increase location flexibility Interested in the interaction between different locations/formats	Hierarchy of formats specifically designed for different customer needs / missions	Specific models developed for decisions Interest in more integrated modelling to address complex interactions
Summary	This section concerns the location and format of the store and gives some insight into the way in which space is conceptualised and modelled at a variety of scales. It relates to the research themes "Formats and adaptation" and "Landscape potential"		

Table 3.1: (continued) Tabulated responses from retailers to the interview questions

Description	Decision-making processes	Use of decision-support tools	Data sources and issues	Centralised vs. Decentralised
Retailer A [M&S]	Analysis capability in real decisions	GIS and data manipulation well-established No integrated tool	Range of store sizes and locations enables considerable use of analogues Extensive self-generated data sets from 'loyalty card' Purchase commercial data sets Focusing on very high degree of customisation to individual customer	Centralised decisions to authorise local experimentation
Retailer B [Boots]	Negotiations between central specialist teams responsible for different aspects of decision. Mix of analysis plus experience but changing mix of stores has reduced value of analogues and emphasised analysis	Excellent analytic capability. Ad hoc analysis driven by nature of decision No integrated tool	Excellent data sets, especially of consumer behaviours as cohort ages derived from 'loyalty card' Also use commercial data sets	Has varied over time, now tending to centralise.
Retailer C [Sainsbury's]	Central specialist teams negotiate around iterations of proposals working up an optimum proposal for senior approval. Calculations in proposal become targets if approved Analogue information used	A number of tools designed and developed over time custom to the decision-making process GIS tools as a matter of course	Excellent data from loyalty card Wide range of commercial data Maintain own data sets on competitors Have, in the past, developed own data where commercial sources too sparse	Centralised with some input from periphery
Retailer D [Debenhams]	Intuition valued as source of innovation and novelty Strongly quantified underpinning to all cases for expenditure	No integrated tool has been found to be appropriate Use of own models but not an integrated suite Focus on robust and new insights to support better decisions	Good data from loyalty card Use commercial data sets	Centralised decisions and increasing central provision of data to periphery to support local interpretation of consumer behaviour Experimenting with local decision making in constrained domains. Results of experiments disseminated widely
Retailer E [HBOS]	Most dynamic decisions around product lines are related to demographics and lifestyles	Fragmented and constrained by legacy systems	Own data plus extensive commercial datasets	Centralised decisions on format, layout and product range, local decisions on local promotions
Summary	The issues raised above concern data, intelligence and information. It also concerns the way in which retailers manage spatial and customer data and use it to make strategic or tactical decisions. There are elements of all four research themes in this section, as it deals with all aspects of retailing decision making.			

Table 3.1: (continued) Tabulated responses from retailers to the interview questions

3.7 Link to EPSRC Retail Project Research Themes

As mentioned earlier, this project was linked to an EPSRC project and in return for providing CASA with their time for interviews, the following research themes were identified and presented at seminars. They represent opportunities for further research as revealed by the interviews.

3.7.1. The mobile consumer

The key premise in this research theme is that shopping trips are not necessarily initiated from home. Rather they can be a trip from the workplace or as a stop-off from a commuting trip. The increasing mobility of the consumer, coupled with commuter behaviours leads to a proportion of shopping being strongly conditioned by mobility, be it commuting, shopping while 'at work' or shopping events that combine alternative missions, but depend on mobility.

Each of these factors leads to consumers shopping in different modes, resulting in a need for retailers to build a deeper understanding of such modes and behaviours and demands for different sorts of data.

3.7.2. Shopping the network

Retailers are developing different formats of store and hence consumers are faced with a network of different sorts of stores available to them, from which they can shop in different ways. How do consumers respond when faced with a given retailer's network? How do they 'shop' the network? How do they behave when faced with different formats from different retailers?

3.7.3. Formats and adaptation

How many formats does a retailer need to address a target market? What is the interrelationship between designing the formats, choosing the categories in each type of store and the restrictions/ support of the common brand? This work also considers questions of scale in retailing; 'macro scale' (the choice of categories

within formats), 'micro' scale (the choice of products within categories) and 'nano' scale (the choice of shelf-layouts by product).

3.7.4. Landscape potential

Endeavour to find new ways of valuing market potential in the Retail landscape, by evaluating other attractors (either synergistic or antagonistic). There need to be predictive models built that can characterise regions across many attribute levels. A parallel to this could perhaps be the way in which population is characterised based on census and lifestyle characteristics in geodemographic profiling.

3.8 Conclusion to Chapter Three

In conclusion, the interviews gave this research an insight into the concerns and ontologies used by retailers in the UK. It also provided evidence that there is still a shortfall in terms of understanding the delimitation of retailing centres and the availability of government statistics for retailing centres.

These interviews also provided proof that there is a great deal of research yet to be done, using the latest techniques in both GIS and IS.

The research themes put forward by this work are intended to be useful as a method for analysing and classifying the spatial aspects of retailing. This research was in a unique position to be able to compare and contrast answers and thoughts about issues of space and then to tabulate and classify them as above.

This chapter is the final part of the "knowledge base" for this thesis. The academic and the industry views have been described, the intention of which is to give the reader a sound base in which to properly place the following two chapters. These next two chapters will describe the experimental research, results and conclusions drawn from fieldwork conducted in the summer of 2003.

Introduction to Part Two

This is the second part of the work, which builds on the knowledge base provided in chapters One, Two and Three. Having provided that background, this part of the research will describe some case study retail centres. It will then report on some geometrical analysis performed on them and the results of a series of field visits.

This part will consist of a compare and contrast exercise, with regard to Goad and the Town Centres Project.

Both sources of boundaries are available and in fact most frequently found in a GIS form. It would make sense then, seeing that the data is typically found in this format, to compare the two boundary types using a range of GIS procedures. This chapter will attempt to address the question of retailing centre definition using a combination of geometric and GIS analysis, and a series of field visits to compare the former with a first-hand empirical investigation.

Chapter Four: Data preparation and spatial analysis

This chapter will introduce the individual retail centres that will be investigated in the experimental section of this work (see Figure 1.1, Page 7 for description of thesis organisation). These case study centres will be divided into five groups and these centres will be the case study sites for both chapters four and five. The work in this chapter will use spatial analysis techniques to quantify and analyse some aspects of the case study retail centres.

4.1 The case study towns, selection and preparation

The size of the datasets involved meant that it was unrealistic to carry out meaningful analysis of the whole Town Centres Project region (meaning the extent of the pilot study of the project, which can effectively be considered to be the extent of Greater London). However, London can be considered the ideal test bed for such research in that London is a large enough area, it contains some hundreds of "London villages" i.e. locations which, although a part of the London conurbation, have intrinsically individual characteristics (Hall, 1999). London is also a city with a centre renowned for its retailing, that centre including places such as Covent Garden, Oxford Street, Carnaby Street and Piccadilly (Figure 4.1 & Figure 4.2), which although part of the same retailing core of the city, retain some individuality.

Figure 4.1: Carnaby Street


Figure 4.2: Piccadilly

Furthermore, as the methodology of the research depended on a series of field studies to determine the reason for the spatial patterns and characteristics of the retailing centres, it became apparent that a manageable number of field sites would be required and that these would have to be visited. Considering the central London location of CASA, a London-based study was the obvious choice.

Several selection techniques were considered, including a random selection of twelve centres and a selection based on a division of the town centres on five groups of similar areas. None of these were particularly suitable and so a pragmatic approach was taken. A map was produced of all of the Town Centres Project and Goad polygons within Greater London (see Figure 4.3), showing only the outlines of the two types of town centre. From this map it was easy to see the geometric characteristics of the various centres, but not know which town the shapes related to. Twelve were chosen, falling into five groups, each displaying a difference or similarity in the Goad or Town Centres Project delimitations.

To summarise then, the twelve centres were picked by hand, rather than employing an automated technique to select them. Although it would be technically feasible to automatically select the case study centres based on geometric characteristics (as the procedure would only need to be performed once) it was deemed more sensible to carry out a manual selection. The case study centres selected are described, by group, in the following pages.

The groups were chosen to broadly cover each quadrant of London, in order to avoid over coverage of one particular part of London. Consideration was given to the potential of spatial autocorrelation in centres. Places nearer to each other may share attributes and characteristics, simply because they serve the same demand zone and hence geodemographic characteristics. Alternatively, they may have been built at a similar time, resulting in them having similar urban form. These groups would be the areas subjected to GIS / Geometric analysis and later visited in the field work. Figure 4.4 shows the towns selected, broken into the five groups.

Group One: Centres where the Town Centres Project and the Goad plans show a good match

Wood Green

Hounslow

Richmond

In this group there was little difference between the shape and size of the two delimitations. The shape and orientation of the delimitations was a subjective measure – it was checked by eye and those that were considered to be similar were marked for potential selection. The town centres selected were Wood Green, Hounslow and Richmond. In this group the key themes to investigate were why and how the two tally. It was important to discover what were the factors (either in methodology or in the structure of the town itself) that lead the two delimitations to agree, considering that they have very different methodological processes.

In order to investigate the differences between the delimitation methods the cases where the two disagreed were of interest. In particular the cases where one methodology did not register a town as existing at all were extreme examples. It was of interest to know what made a town "drop off" a map of London's town centres. So, for those in Group Two, the question asked was "why was this town considered to be an important centre by Goad (or its customers) and yet it did not make it above the key contour in the Town Centres Project?".

Group Two: Centres which are present in the Goad plans but not Town Centres Project

West Hampstead

Bethnal Green (including Bow and Roman Road)

Barnes

This group is of particular interest to this research. In order for the centre to be included in the Goad plans, but not in the Town Centres Project, there must exist something like a town centre or a retail centre, in order for a Goad plan to have been commissioned. However, the spatial mix of statistics would have to be not dense enough to register as a bona fide town centre. It is likely that in this group of centres, any potential flaws of the Town Centres Project will be found.

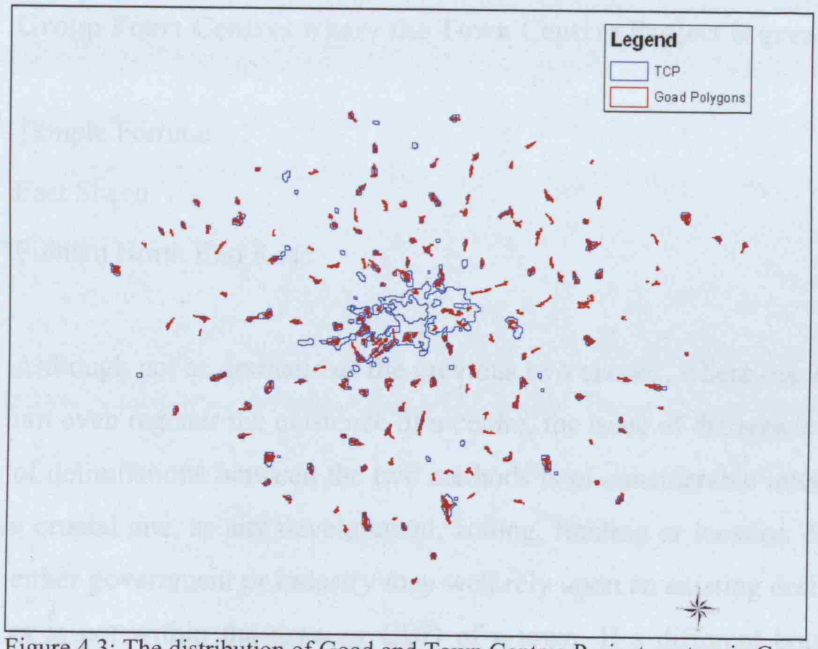

Figure 4.3: The distribution of Goad and Town Centres Project centres in Greater London

Group Three: Centres which are present in Town Centres Project but not Goad

Edgware & Burnt Oak

Kilburn

Chiswick

The extreme case of the methodologies not tallying is where one method registers the existence of a town and one does not. In this group the town centres were above the Town Centres project key contour, yet Experian (or its consumer base) did not consider it cost effective to survey. It is initially difficult to imagine how this can happen. it would seem to be likely that any place towncentred enough to register with the Town Centres project would automatically justify a Goad profile too.

Group Four: Centres where the Town Centres Project is greater than Goad

Temple Fortune

East Sheen

Fulham North End Road

Although not as dramatic as the previous two classes, where one methodology did not even register the existence of a centre, the issue of difference between extents of delimitations between the two methods is of considerable interest. The issue is a crucial one, as any development, zoning, funding or location decision made by either government or industry may well rely upon an existing definition of what is or is not within the town or CBD of a town. If a different boundary is drawn, (depending on which methodology is used), there exists the potential for disparity. The fieldwork would then focus on the areas where there was disparity between the two methods, with a view to discover why they produced different boundary delimitations.

Group Five: Centres where Goad is greater than Town Centres Project

Wembley (Including Wembley Park)

Camden Town/ Primrose Hill

Docklands and Canary Wharf

As with the other groups, the key issue in these centres was to visit the areas where the boundaries disagreed and try to determine why that was.

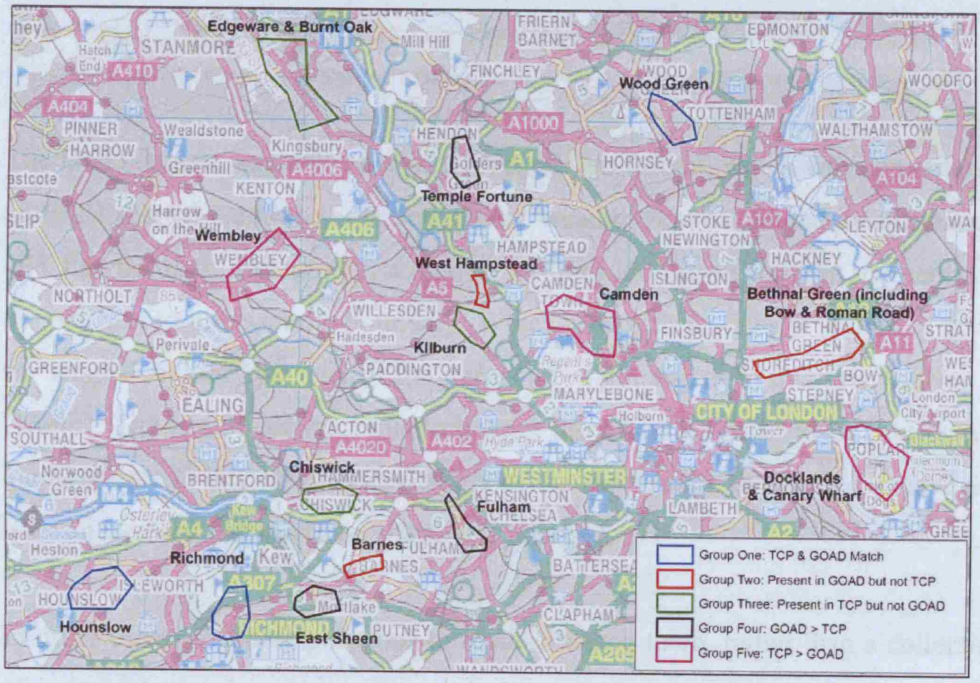

Figure 4.4: The Case study towns, classed by group.

4.2 Spatial Comparisons of Centres

This section will investigate methods of creating standard areas around town centres, so as to allow direct comparison. Using GIS tools it is possible to find an objective method of creating areas. In this case scripts were sourced that either allowed the creation of binding circles in the style of Feret's Circles (Longley et

al., 1991, Longley and Mesev, 2000) or by calculating the length, along with perimeter, area and (as also in the case of the Feret's circles) radius.

The practical advantage of this is that we can then put a list of towns, along with their spatial attributes, into a data analysis product and interrogate it for patterns. For example, if we added the population numbers for each town we could investigate whether the size of the circle or area is proportional to the population (Abhyankar, 1995).

4.2.1 Bounding Polygons -"Twist Tie"

The Goad dataset was delivered in a MapInfo tab format, which was converted to an ESRI shapefile and the area, length and breadth were calculated using standard GIS functionality. Essentially, a number of lines are drawn through the centre of the polygon to intersect the boundary. Whichever of these lines is longest is given as "length" and the diameter of the polygon at right angles to this line is given as "width". The use of convex hulls to delimit the extent of Goad town centres was inappropriate in this case because many of the centres are, in places, concave and it was necessary that the basic shape was retained.

In order to create single polygons to represent each town, rather than a collection of independent polygons, an encapsulation technique needed to be used. Rather than using an automated approach for the main town centre outline which is subject to a certain amount of error, the main towns were encapsulated by hand. Although technically feasible, the length of time spent developing such a tool to encapsulate twelve centres would be inappropriate and so a semi automated approach was used.

The approach involved firstly making a buffer around each polygon of 10 metres. The reason that the buffer was made at 10 metres was that with the polygons

typically being hundreds of metres across, a buffer of 10 metres allows the boundaries to be smooth, whilst still maintaining their shape.

Island polygons or multiple polygons were then deleted, leaving an encapsulated shape – informally referred to here as a "twist tie" (see Figure 4.5), named after the wire encased in a thin strip of paper or plastic used to tie the openings of grocery bags. The advantage of these polygons over the collection of building footprint polygons that constitute a Goad town is that they are far easier for performing analysis, but crucially, it is the boundaries that this research is concerned with, and as Goad does not contain boundaries as part of the product, some arbitrary boundary-creation technique must be employed.

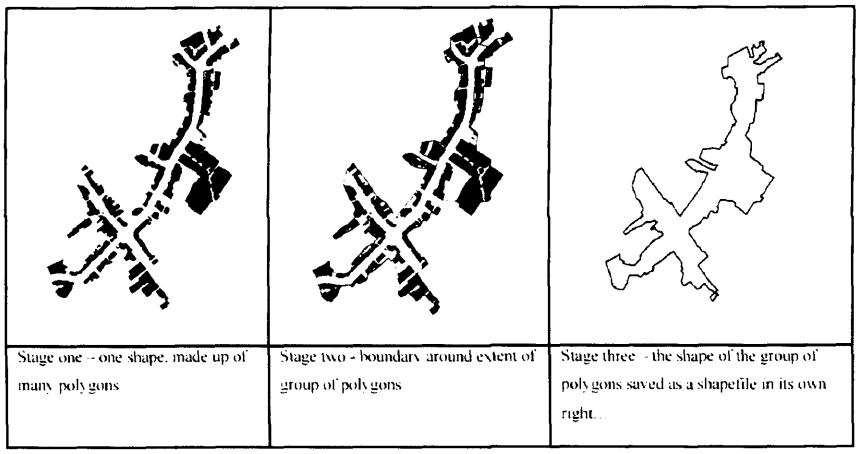

Figure 4.5: The progression from multi- polygonal data to single "twist-tie" polygon

4.2.2 Area comparisons

The area in square meters was calculated using the formula "Area Calculation" by Gauss:

Area = (Sum(y(n)-y(n+1))*(x(n)+x(n+1)))/2

as described in Preparata & Shamos (1985). The areas were compared to determine whether any pattern could be found.

Boundary	Group	Goad area (sq meters)	Town Centres Project Area	Multiple (TCP/Goad)
Wood Green	1	195,542	475,000	2.43
Richmond		194,725	500,000	2.57
Hounslow		271,686	517,500	1.90
West Hampstead	2	71,600	NA	
Bethnal Green (including Bow and Roman Road)		302,592	NA	
Barnes		103,551	NA	
Burnt Oak & Edgware	3	NA	425,000	
Kilburn		NA	285,000	
Chiswick		NA	487,500	
Temple Fortune	4	117,664	50,000	0.42
Fulham North End Road		243,435	390,000	1.60
East Sheen		107,004	127,500	1.19
Camden Town / Primrose Hill	5	312,341	852,500	2.73
Wembley		148,223	507,500	3.42
Docklands and Canary Wharf		281,501	1,100,000	3.91

average multiple
2.24

Table 4.1: Tabulated areas of centres

The Town Centres Project areas tend to be bigger than the Goad (even in the case where they appear to match and have been grouped together as such) because they are always convex and the Goad polygons very often concave. It can also be seen that the raster based production of the Town Centres Project areas produces numbers rounded to the thousand.

4.2.3 Circles and Diameters

The use of Feret's diameters to encapsulate the delimitation of a city for comparative study is well established (Kaye, 1989, Longley et al., 1991) and addresses some of the problems described in the previous subsection.

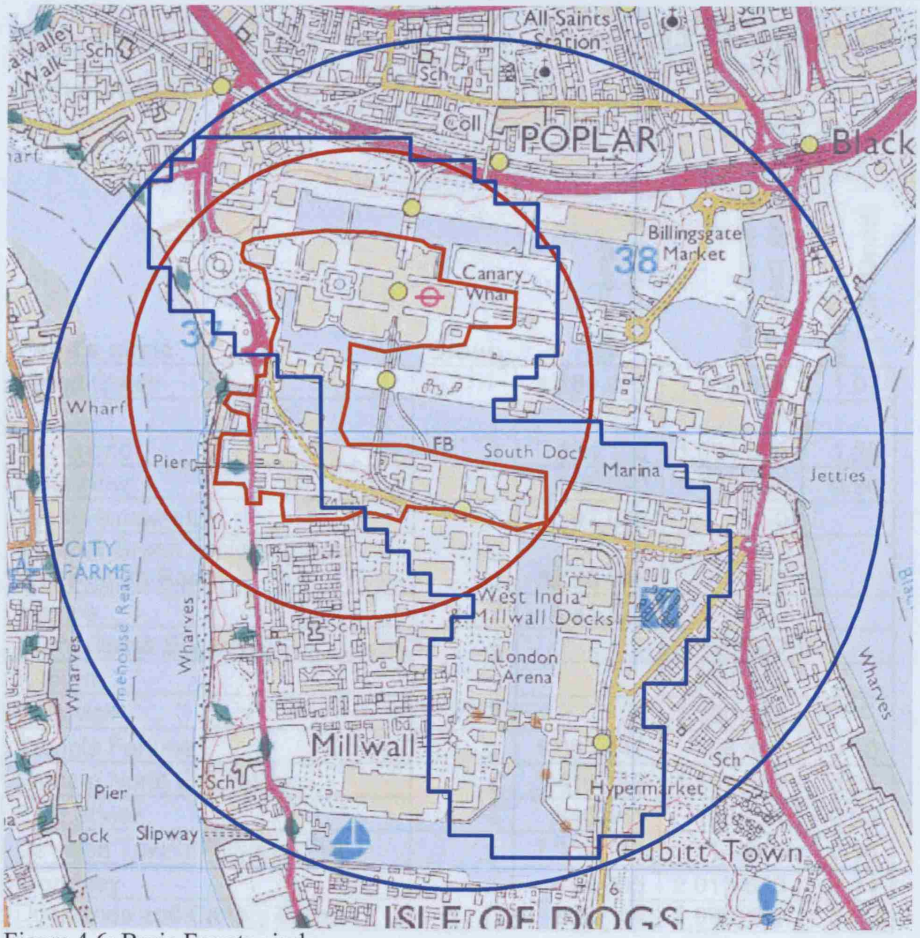

Figure 4.6: Basic Ferrets circle

The Feret circle is a circle drawn around the boundary of the centre with both the centroid of the boundary polygon and the circle matching. The circle is extended

from this common origin until it intersects the furthest point of the boundary from the centroid. The areas are calculated and the average multiple between the Town Centres Project and Goad calculated. The difference in average multiple between the two Feret circle areas can be seen to be smaller (see table 4.1 and 4.2) than when the boundary area alone was used.

What this shows is that, on average, the Feret circles areas are a closer match between the two methods of delimitation and so could be argued to be a better method for deriving areas for analysis. However, what this exercise more pertinently shows is that an automated area-based investigation of the difference between Goad and Town Centres Project delimitations is unlikely to bring any great insight as to why one town may or may not be represented in either methodology.

Feret's circle	Group	Goad area (sq meters)	Town Centres Project Area	Multiple (TCP/Goad)
Wood Green	1	1,269,282	1,354,078	1.07
Richmond	1	854,198	1,094,399	1.28
Hounslow	1	1,806,540	1,733,456	0.96
West Hampstead	2	497,090	0	
Bethnal Green (including Bow and Roman Road)	2	8,593,646	0	
Barnes	2	881,321	0	
Burnt Oak & Edgware	3		925,567	
Kilburn	3		714,264	
Chiswick	3		1,360,935	
Temple Fortune	4	1,054,447	108,396	0.10
Fulham North End Road	4	3,419,173	1,199,988	0.35
East Sheen	4	846,451	198,524	0.23
Camden Town / Primrose Hill	5	2,389,143	714,264	0.30
Wembley	5	641,805	2,013,656	3.14
Docklands and Canary Wharf	5	908,144	2,999,431	3.30

average multiple
1.19

Table 4.2: Tabulated areas of Ferets circles of centres

4.3 Conclusion to Chapter Four

As discussed in the previous section, there is no obvious discernable difference between the two systems, other than those we would expect. Although possible to develop a technique with which one could investigate differences in boundaries automatically, it seems much more practical to perform a series of field visits and assess what may lie behind the differences first hand.

Chapter Five: Retail Centre Visits and field work

As shown in the retailer interviews, the notion of 'town centeredness' is perhaps more a matter of perception than a strictly measurable phenomenon. That is partly why the techniques to represent and define town centres employed by government and industry have all fallen short in some way.

5.1 Surveyed Comparison of Towns

Differences between Goad and the Town Centres Project have been discussed in Chapter Two, but it is worth restating briefly here that they have fundamentally different objective and philosophical origins. The Town Centres Project was set up to provide data about town centres with a view to protecting town centres from erosion by out-of-town development (Guy, 1985, Schiller, 1986). It is bound by disclosure rules and so is forced to use a kernel approach in order to mask the data at small scales. In order to avoid earlier problems associated with local authorities deciding the extent and delineation of "town centres" problems subjectively (e.g. personal agendas, the moving of boundaries for budget reasons) the approach was performed objectively, based on postcode georeferencing (Gatrell et al., 1991, Raper et al., 1992).

A kernel was passed over the point theme containing data combined from the ABI and VOA (see section 2.3.2.3) and a surface produced. As mentioned earlier (see section 2.3.2.2), the Goad system is a continuation (albeit an extended continuation) of the Charles Goad fire insurance maps of the 19th century. The current Goad maps are produced by surveyors, who visit a town centre and record the fascia and primary use of each building within the boundary. It is a matter of personal opinion of the surveyor as to where the town centre starts or ends. Although in most cases it is perfectly clear what the delineation is, the subjective form of recording means it is possible that the surveyor's own prejudice or preconceptions, training and understanding will influence the boundary placement of the centre.

Particularly where the two depictions of town centres differ, it is necessary to visit the centre to understand why the difference occurs. For example if the Town Centres Project depicts the centre as being much bigger than the Goad plan it may be for one of many reasons. For example, it could be because there is a Head Office of a major retailer, which would exaggerate the number of workers associated with retail in an area. Alternatively it could be that figures for a region have been averaged across several stores, or perhaps a georeferencing problem associated with interpolation based on post code unit centroids.

In order to understand the limitations of Goad and the Town Centres Project, it was necessary to visit the centre in order to see first hand where the true boundaries of retail activity ended.

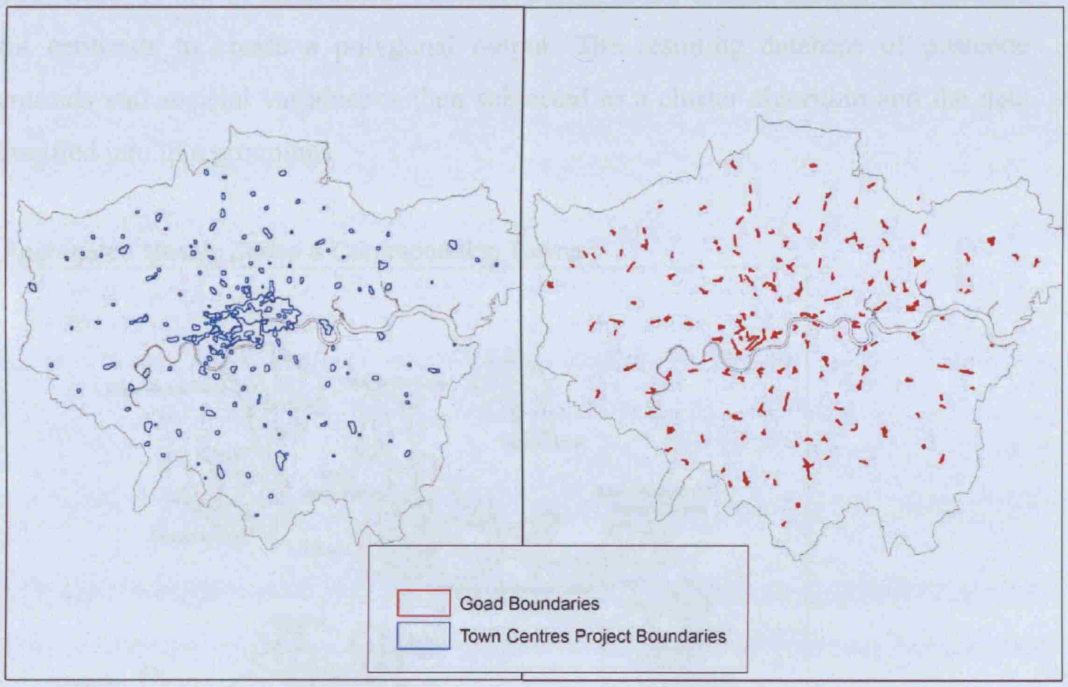

Figure 5.1: The locations of the Goad (red) and Towns Centres Project Towns (Blue) in London

5.1.1 MOSAIC profiles

For each town centre a breakdown of MOSAIC profiles has been included. MOSAIC is an example of a geodemographic profile. This is in order to give a fuller picture of the town's hinterland and social make-up in order for the reader to have a more detailed picture of the town in question.

MOSAIC is probably the industry leader and as such is representative of those geodemographic profiles discussed in Chapter Two. To recap, a geodemographic profile is created by appending numerous values pertaining to society (census variables or the results of lifestyle surveys) to postcode units (Longley and Harris, 1999, Goss, 1995). In some cases, Theissen polygons are created around the postcode unit centroids to create a polygonal output. The resulting database of postcode centroids and societal variables is then subjected to a cluster algorithm and the data classified into like groupings.

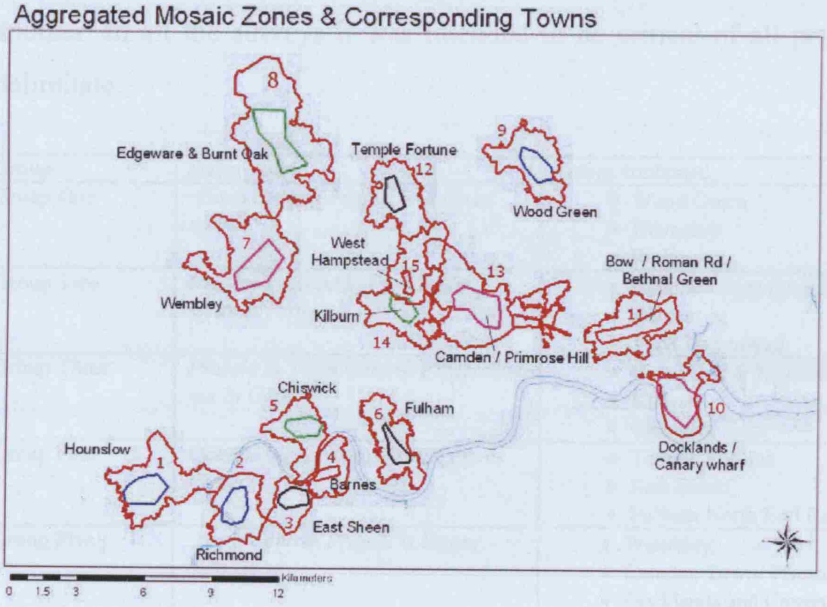

Figure 5.2: Aggregated MOSAIC regions with the grouped towns

The postcode sector data was aggregated up to the new regions which covered the selected town areas to create new regions of combined MOSAIC districts. The distribution of MOSAIC types within the regions of the project area can be seen in the

Appendix. Graphs of the individual breakdown of MOSAIC types within each Town Centre area can be found in the introduction to the survey results later in this chapter, along with a brief description of the geodemographic make-up of each centre.

The following section provides the results of a survey carried out in the summer of 2003 of the 15 town centres identified for study. The intention was to follow the Goad methodology in that the extent of the town centre area was walked by two surveyors and a decision made as to where the line of delimitation should be placed. However, this survey went further, in that maps were produced showing the extent of delimitation of both the Goad and the town centres project. These maps were taken on the field survey and the boundaries of each visited and investigated. Also, in carrying out this survey it was important to constantly attempt to gauge the changes in urban form and use, with a view to testing the sensitivity and subjectivity of the Goad surveyors' choices.

In reality, the town may have changed somewhat since the last survey, or one surveyor's understanding of how and where a town begins or ends may be different to another. In all the surveys it was intended to be critical of all previous attempts to delimitate.

Group	Description	Towns contained
Group One	*Town Centres Project and Goad match*	• Wood Green • Hounslow • Richmond
Group Two	*Present in Goad but not Town Centres Project*	• Bethnal Green (including Bow & Roman Rd) • Barnes • West Hampstead
Group Three	*Present in Town Centres Project but not in Goad*	• Burnt Oak & Edgware • Kilburn • Chiswick
Group Four	*Goad is bigger than Town Centres Project*	• Temple Fortune • East Sheen • Fulham North End Road
Group Five	*Town Centres Project is bigger than Goad*	• Wembley • Camden Town/ Primrose Hill • Docklands and Canary Wharf

Table 5.1: The Case study towns sorted by group.

Having made notes at the two boundaries (the Goad boundary and the Town Centres project boundary) photographs were taken and explanation sought for why there were differences, if that was the case. Each town is introduced with a brief history of the area, a discussion about the statistical social make-up of the area (from Experian

MOSAIC profiles) and a discussion of the changes in boundary. The towns are dealt with in order of groups in Table 5.1.

Throughout the following section, each town centre description will include a map, as seen in the example of Wembley in Figure 5.3. This map shows boundaries (both Goad and the Town Centres Project) overlaid over a raster street map. As for the whole of this project the Town Centres Project boundaries are represented by a blue line and the Goad boundary with a red line.

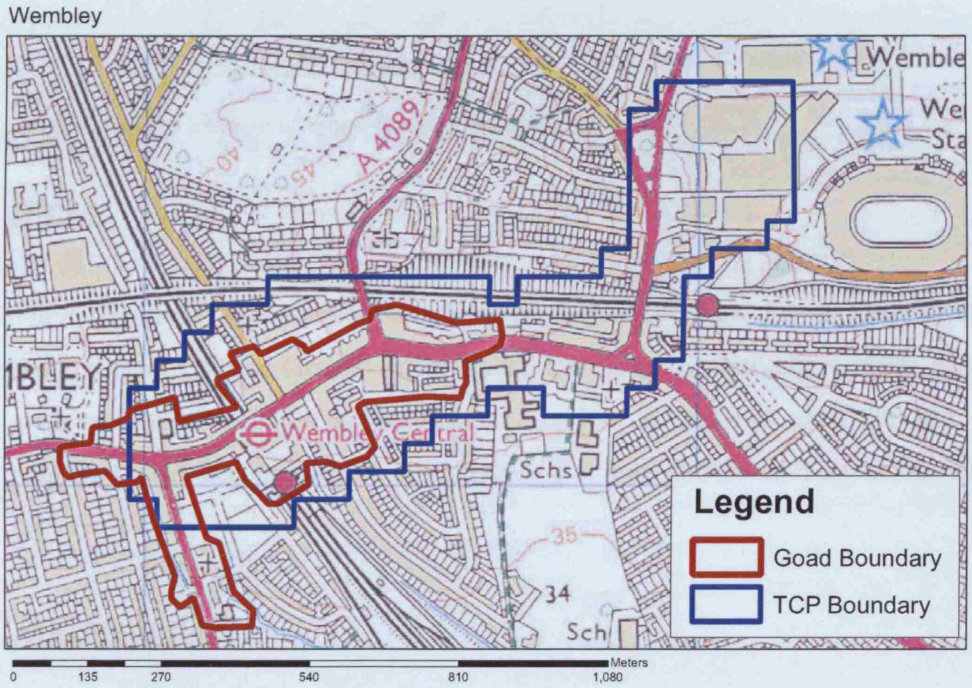

Figure 5.3: Wembley highlighting Goad and Town Centres Project boundaries

5.1.2 Group One: Town Centres Project and Goad match

Wood Green

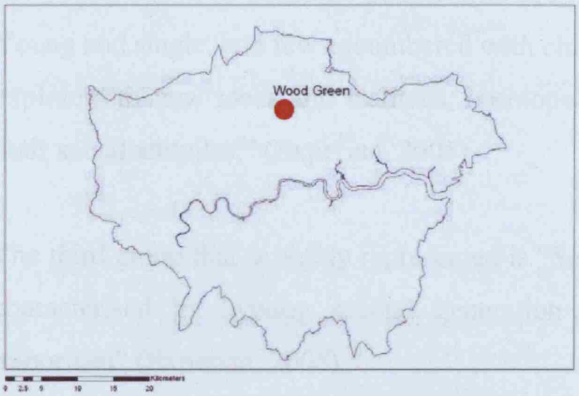

Figure 5.4: The location of Wood Green in Greater London

History

There have been settlements along the river Lea since Anglo Saxon times at least, and the name "Wood Green" testifies that it was, until relatively recently, a rural area outside what could be considered London. It was not until the late 19th century that it became an urban district and it was known as Tottenham Wood Green until its development.

Area Make-Up

Over half of Wood Greens 216,800 people come from ethnic minority backgrounds, including Greek and Turkish Cypriot, Turkish, African and Caribbean, Indian, Pakistani and Bangladeshi, Irish and Chinese. Recently, Kurdish, Somali and Kosovan nationals have settled in Haringey (Haringey Online[1]).

Unsurprisingly, the geodemographic background of Wood Green supports the suggestion of a mixed area, not only of ethnic backgrounds, but also of social

[1] http://www.haringey.gov.uk/aboutharingey/statistics.htm

groups. The three groups that make up the majority of the area reflect this mix. "Ties of Community" reflects an older working class community which has remained stable for many years, whilst "Urban Intelligence", which is described as "young and well educated people who are open to new ideas and influences. Young and single, and few encumbered with children, these people tend to be avid explorers of new ideas and fashions, cosmopolitan in their tastes and liberal in their social attitudes." (Experian, 2005).

The third group that is highly represented is "Settled Minorities" which is itself is characterised by "young second generation black British and other ethnic minorities" (Experian, 2005).

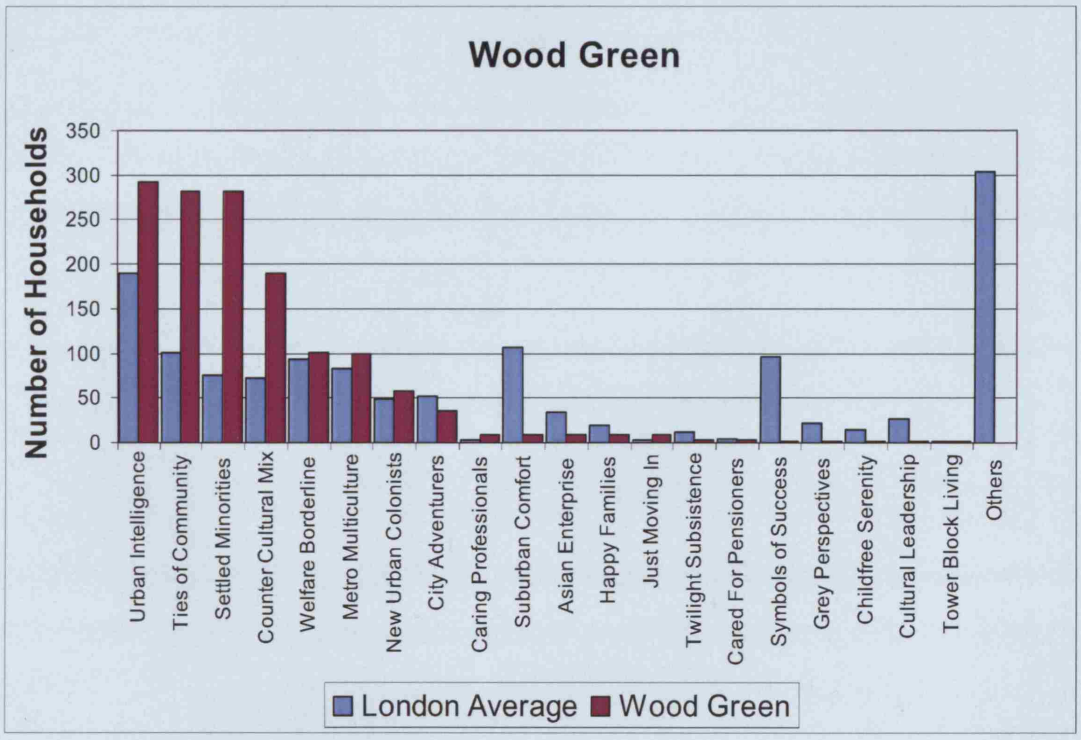

Chart 5.1: Geodemographic breakdown of Wood Green

Boundaries

Wood Green is located in Haringey, in North London. It is west of Seven Sisters and can be considered to be in the heartland of the north London residential conurbation.

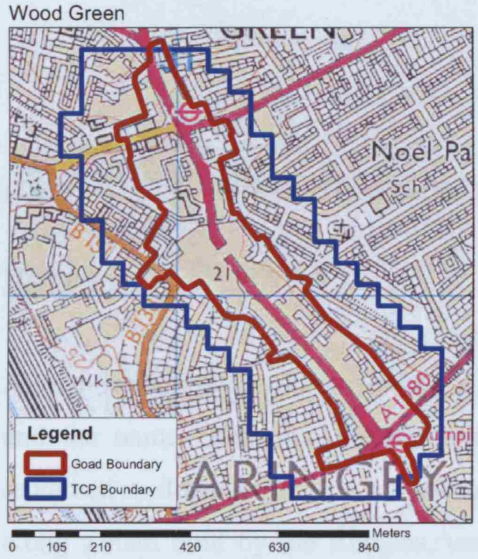

Figure 5.5: Wood Green highlighting Goad and Town Centres Project boundaries

The Goad and Town Centres Project agree so well because it would be difficult for either methodology to get it wrong as the retailing or town centred activity is well defined. The centre of Wood Green is an island of retailing activity within a strongly residential area, meaning that it is easily identifiable in either delimitation method.

Hounslow

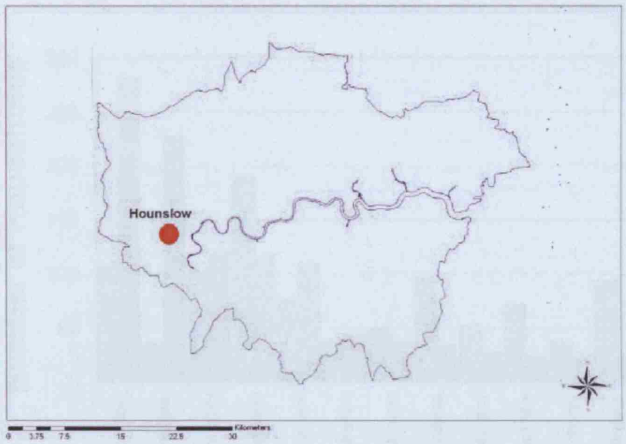

Figure 5.6: Location of Hounslow in Greater London

History

A town has existed in what is now the centre of Hounslow since the 13th century and the name Hounslow derives from *Hundeslawe*, meaning Hund's Hill. It remained a stopover town on the routes between London and the south west, along a road built by the Romans, until the latter half of the twentieth century, when the expansion of Heathrow Airport resulted in employment and development of the area.

Area Make-Up

Hounslow has the feel of a satellite town, with considerable redevelopment in the 1960s and 70s. The nearby Heathrow airport is a source of location controversy, as well as employment. There are plans to extend it, but the local council and majority of residents believe that Heathrow has reached the limit of sustainable development. Hounslow has a much broader mix of geodemographic types than the majority of the other sample sites.

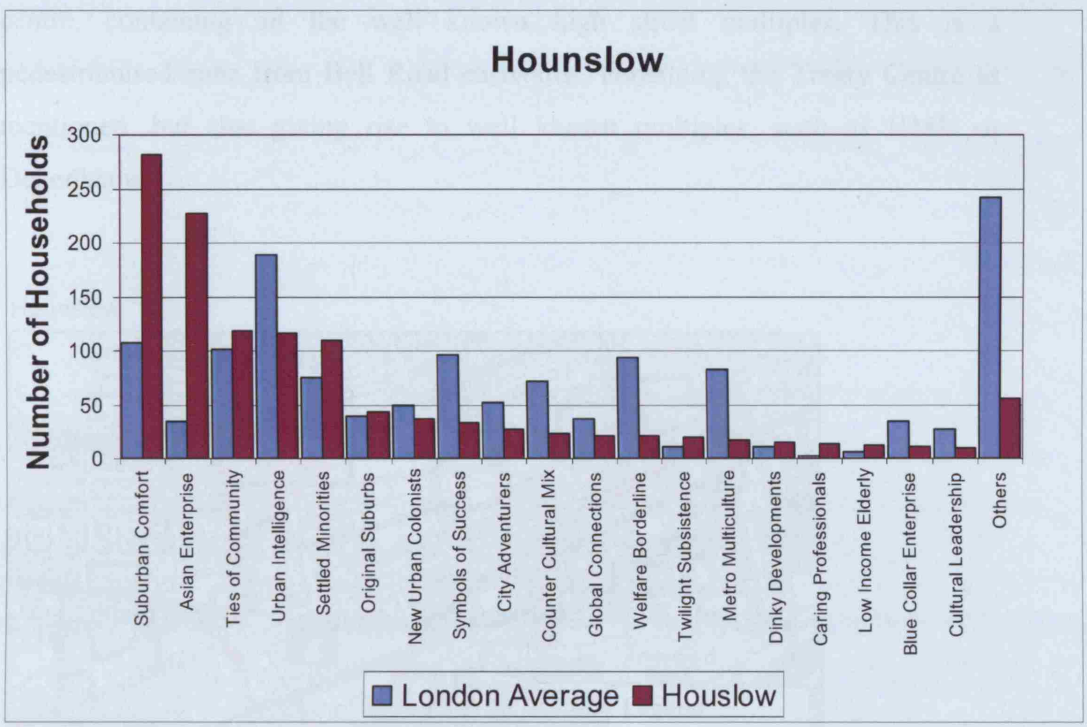

Chart 5.2: Geodemographic breakdown of Hounslow

There are two leading groups in Hounslow, which are both much higher than the mean for London. They are "Suburban Comfort" and "Asian Enterprise" which respectively can be said to characterise established family groups with maturing children, and "well-qualified minorities, mostly from Asia, who have settled in suburban semi-detached houses in inter war suburbs". What this suggests is a well-off, diverse and vibrant community.

Boundaries

Hounslow is located in the far west of Greater London, very close to Heathrow Airport. The centre of Hounslow runs east to west along the high street, a former Roman Road, which falls into three clear zones. Firstly the western edge of the town contains mainly offices, but is probably pushed above the Town Centres Project key contour by the large Halfords and Currys situated in the far western corner. This zone extends from the western edge of the town, to Bell Road. Secondly, there is the area dominated by the Treaty Centre, a 1980s shopping

centre, containing all the well known high street multiples. This is a pedestrianised zone from Bell Road eastwards, containing the Treaty Centre as mentioned, but also giving rise to well known multiples, such as HMV or Debenhams.

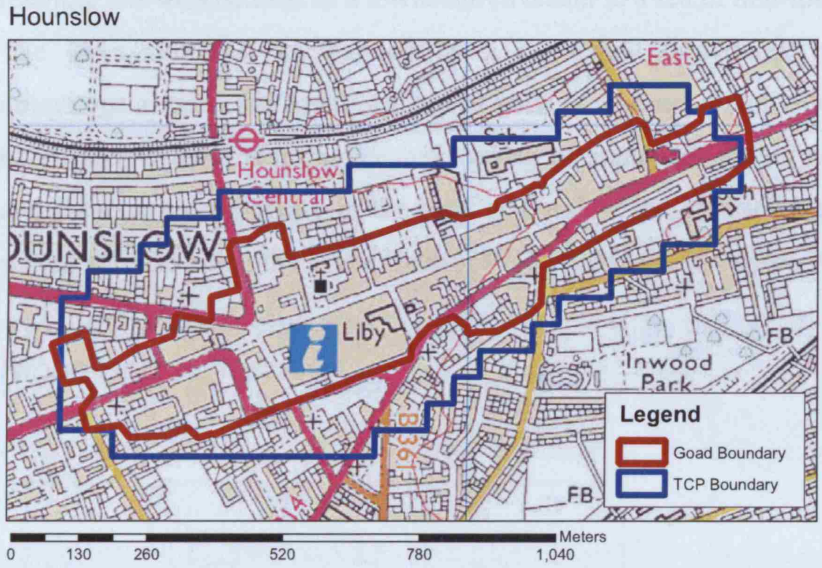

Figure 5.7: Hounslow highlighting Goad and Town Centres Project boundaries

There are plans to build a newer shopping centre, called the Blenheim Centre, which has had a mixed reception. The existing centre does look dilapidated, and old-fashioned, but there remain some concerns about the new plans.

Figure 5.8: Pedestrianised zone outside the Treaty Centre

The third zone - east of the junction between Inwood Road and the High Street and up to the Bus Station, is a slightly shabby 1960s retailing development. It is not pedestrianised and has gone to seed somewhat. It is almost predominantly independents, although there are very few empty units and the shops appear to be doing well. As with Wood Green there are few surprises here in Hounslow. The retailing sits well defined as a towncentred island in a sea of non-towncentredness. The town centre is surrounded by a residential hinterland, parks and the ubiquitous airport. The town is about as wide as a kernel (about 500m wide at the most) and so there is no noticeable overlap of areas that should not be included and there is no ambiguity in the start and end of the town centre in terms that would confuse either the Town Centres Project or Goad surveyors.

Richmond

Figure 5.9: Location of Richmond in Greater London

History

Richmond probably began life as a fishing village, like Barnes or Chiswick. The manor house was originally known as Shene, which probably gave rise to the local town East Sheen, also included in this study. Since the rule of Charles II the town had held the reputation of somewhere clean and healthy that provided an escape from London. This is true to some extent today with Richmond having a reputation as a "commuter belt" town.

Area Make-Up

Leaving the tube station and walking southwards into the main town it is clear that Richmond has a lot going for it. The shops that line the Kew Road are a mix of hi-class independents and well-regarded multiples. The town has more of a country market town feel to it than a London suburb.

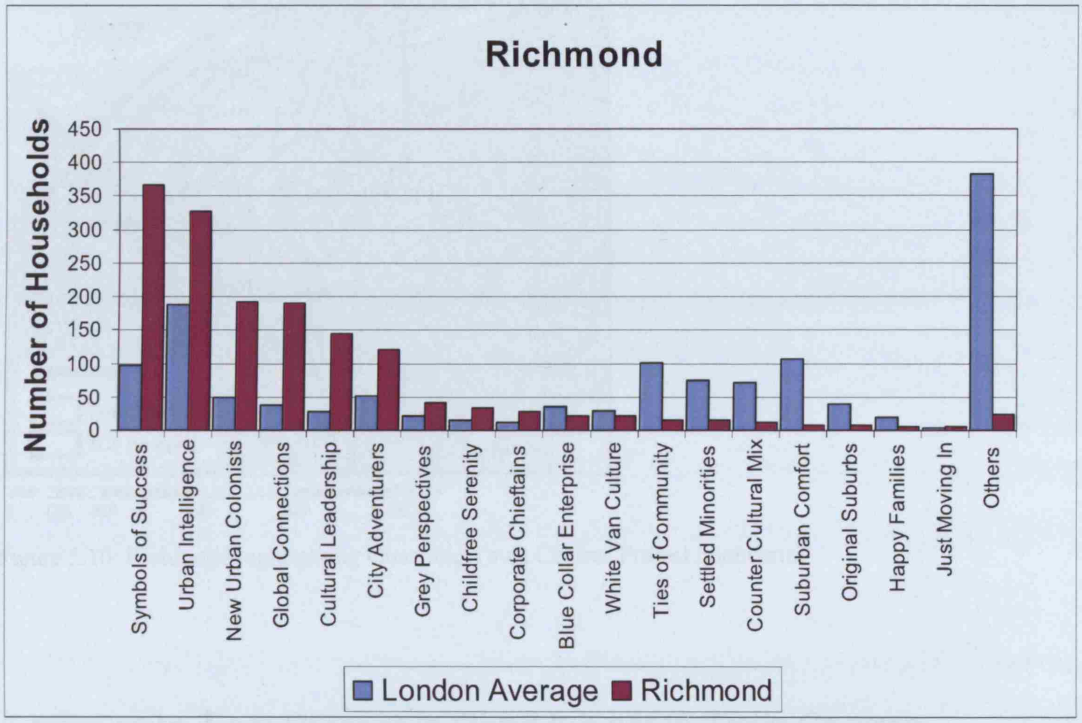

Chart 5.3: Geodemographic breakdown of Richmond

This feel of affluence is supported by the two leading profiles for Richmond are "Symbols of Success" and "Urban Intelligence" which show Richmond to be a wealthy and successful place.

Boundaries

Richmond is located on the river Thames on the outskirts of Greater London. The western boundary of Richmond is delimited by the river and Richmond Park and Richmond Green. To the east, north and south there is a uniform residential hinterland. As a result, the two boundaries not only match each other, but also match the true extent of Richmond town centre. Over Richmond Bridge to the

south there is some retailing present, but this is probably included in St Margarets or Twickenham.

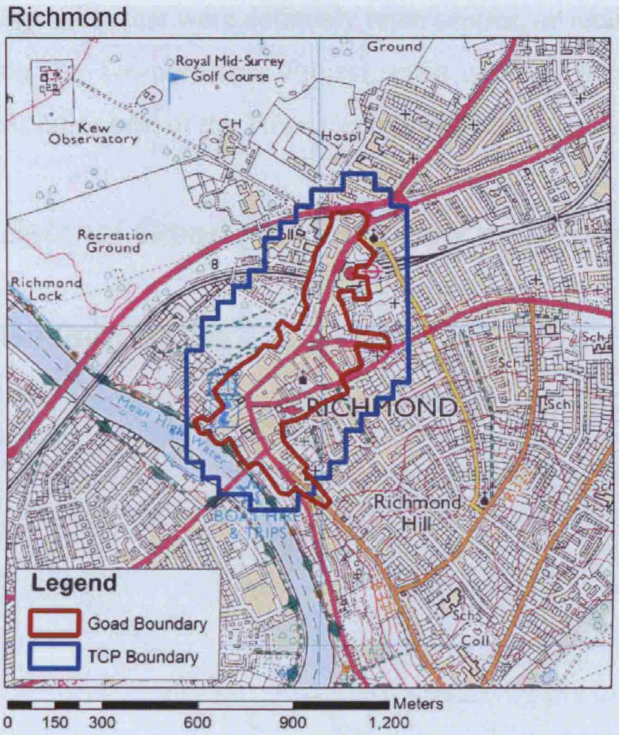

Figure 5.10: Richmond highlighting Goad and Town Centres Project boundaries

5.1.3 Group Two: Present in Goad but not in Town Centres Project

Bethnal Green (including Bow and Roman Road) are represented as three separate towns in the Goad maps, but are considered here together as they occupy different stages along the Roman Road, and can effectively be thought of as the same town. Bow and Bethnal Green represent the extremities, whilst the area described by Goad as "Roman Road" really represents the Roman Road market area of Bethnal Green. Conversely, Barnes and West Hampstead are both self-contained. The objective in visiting this group of sites was to determine what would lead Experian to create a map for an area that the Town Centres Project did not consider was "town centred" enough to include. If any breakthrough was going to

come from this research, in terms of discovering weaknesses in the Town Centres Project Methodology, this group would probably represent that breakthrough – i.e. any areas that were definitely town centres, or retailing centres, but did not appear on the Town Centres Project, must contain characteristics that represented the Achilles heel of the Town Centres Project.

Bethnal Green (including Bow and Roman Road)

Bethnal Green

Figure 5.11: Location of Bethnal Green in Greater London

History

Bethnal Green and Bow have often been considered to be the heartland of the East End. The presence of a pie and mash shop on the Roman Road, along with the vibrant street market, supports this. However, another aspect of the East End has always been the strong representation of recent immigrants and Bethnal Green has a long history of a diverse ethnic population. Some writers have suggested that the East End's traditional role as the poorer half of the city (as opposed to the wealthier west) is a result of the rebuilding if the city after the Great Fire of 1666 (Ackroyd, 2000)

> *"It lies chiefly on the south and west sides of the Regent's canal, and is divided into four districts, called respectively the Church, Green, Hackney Road, and Town districts. The Great Eastern railway passes through Bethnal Green. Within the limits of the parish are the North East London Cemetery, Globe Town, part of Victoria Park, some large brick fields, and extensive market gardens. The houses are generally old and poorly built.*
>
> *The district is very thickly peopled, and chiefly by silkweavers, who carry on their employment at their homes. It is usual for one house to be occupied by several families, so that the official returns for 1861 give only 14,812 houses, inhabited by a population of 104,905. The neighbourhood, however, must be considered healthy, for the increase of population in the decennial period since 1851 has been no less than 14,712, and the excess of registered births over deaths in the same period 15,963, showing a considerable migration to less thickly peopled districts."*

The quotation (above) from the 1868 The National Gazetteer of Great Britain and Ireland (Hamilton, 1868) shows that in 150 years Bethnal Green has changed little in its purpose or social status. It remains the residency of newly-arrived immigrants and the poorest social groups.

Area Make-Up

The market and retailing structure reflects this social position. Almost all the shops in Bethnal Green are of the lower class of independents and the multiples fall into the same category. The market differs from the one at Camden in that it doesn't sell fashion accessories or *objet d'art* but rather staples and cheap imported goods.

Figure 5.12a: The western boundary of

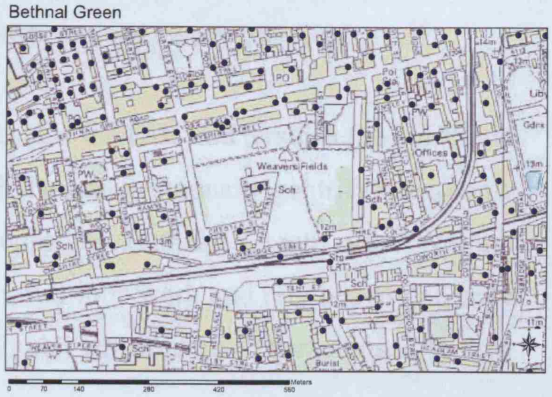

Figure 5.12b: the distribution of unit postcode

Bethnal Green, looking east. It can be seen that the northern (left) side of the street is entirely retailing buildings and the southern (right) side is entirely residential

centroids throughout Bethnal Green.

As can be seen from figures 5.12 a and b, the retailing / town centre of Bethnal Green and Roman Road both follow the route of the Roman Road closely. Directly behind the road is residential housing. This may well stem from the relative modernity of the town – that until the mid nineteenth century these were fields and so the town centre has evolved in a linear fashion, rather than around a nucleus. As a result of this linear structure, the northern and southern boundaries are clearly delimited by residential areas.

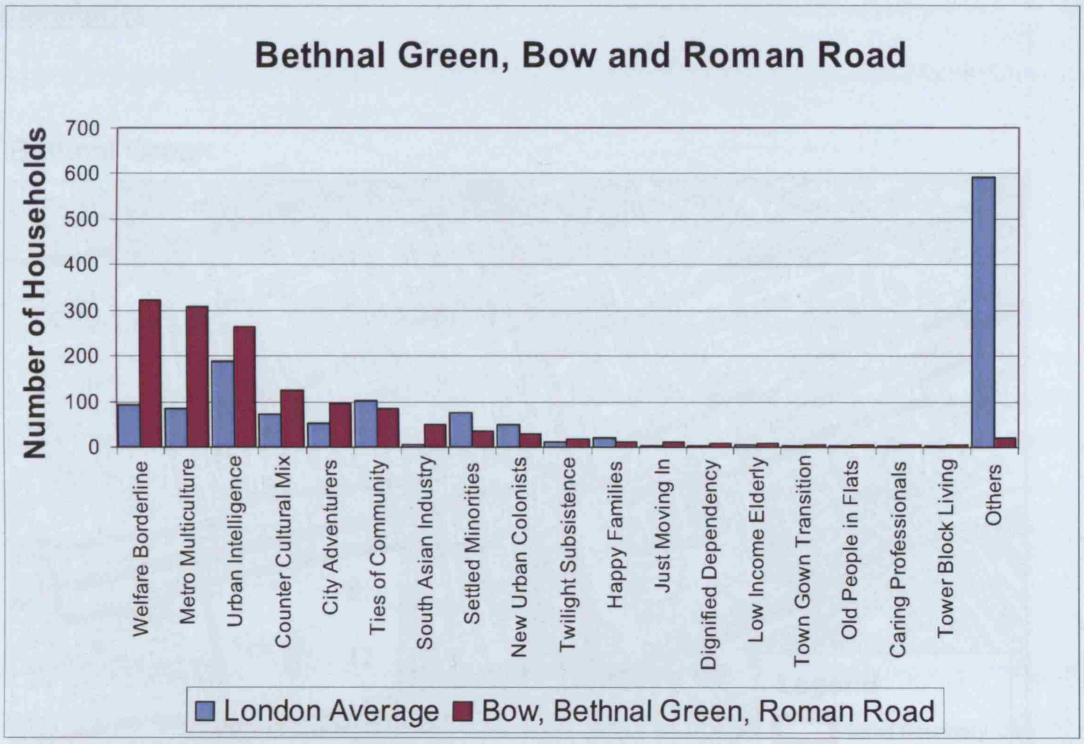

Chart 5.4: Geodemographic profile of Bethnal Green, Bow and Roman Road Area

The geodemographic profile demonstrates that the East End remains the homeland of the disadvantaged in London, although the area is gradually gentrifying in some places. The Two highest profile groups in Bethnal Green are "Welfare Borderline" where people struggle stay in full time work and rely heavily on state welfare for support and "Metro Multiculture" which is also characterised by low incomes.

The presence of "Urban Intelligence", a profile of younger, more adventurous people, ties in well with the beginning of a gentrification process as people within this group are often to be found as pioneers in formerly strongly working class areas. (Experian, 2005). With the exception of "Urban Intelligence" all of the categories within the sector could be described as being from the poorer groups and the sector has no real representation from the wealthier groups of society, with the possible exception of "Urban Intelligence" – a group most commonly associated with artistic or media-related jobs.

Boundaries

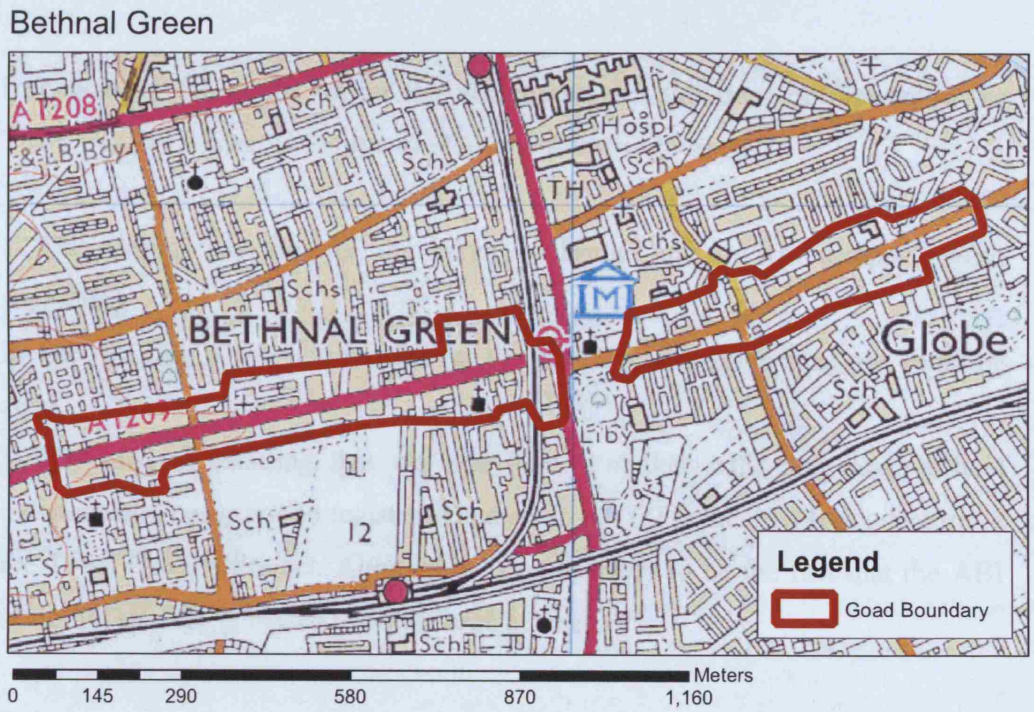

Figure 5.13: Bethnal Green highlighting Goad boundary

The western boundary is a good example of how and why the two systems differ in delimitation. On the northern side of the street, there is a parade of shops which runs the length of the block until the two delimitations meet. However, on the southern side of the street, the buildings are entirely residential (see figure 5.12a).

Further to that the field owned by Weavers Street School (see fig 5.12b) is a large area, near to the centre of the town that contains no unit postcodes and so subsequently no data regarding retailing or towncentred activity.

The eastern boundary – the one close to Roman Road - consists of a gap in retailing of less than 20 metres (the two centres are bisected by the Cambridge Heath Road). There is no noticeable change in the retailing or urban landscape at this point. However, if one needed to draw a line to delimit where the western part of Bethnal Green and the eastern part "Roman Road" meet then this would be the right place. The western boundary is well delimited, as one would expect from a Goad survey. From the western edge of the boundary to the tube station, both sides of the road are continuous retailing - mainly independents with some market stalls and a few multiples.

In conclusion, it would appear that the reason that this does not appear in the Town Centres Project is for one or all of the following reasons:-

1. The strip is too thin for the kernel to bridge and so will disappear with smoothing
2. The retailing is too intermittent for the kernel to recognise it as one retailing zone
3. The kind of retailing that we find here – market stalls and down-at-heel independents - may not be registered and so do not fill in the ABI forms that drive the Town Centres Project. Although it is more likely to be the fact that the ABI sampling strategy is biased towards large business.

Bow

History

The name Bow is believed to come from its arched bridge founded in 1110 by Queen Matilda. The story goes that she fell in the river Lea and was nearly carried away by the dangerous currents, so ordered a bridge to be built there. (Cox, 1994)

Area Make-Up

The retailing centre of Bow is a continuation of the street market retailing seen along the Roman Road, separated from the retail centre of Roman Road by a canal and a small strip of parkland.

Boundaries

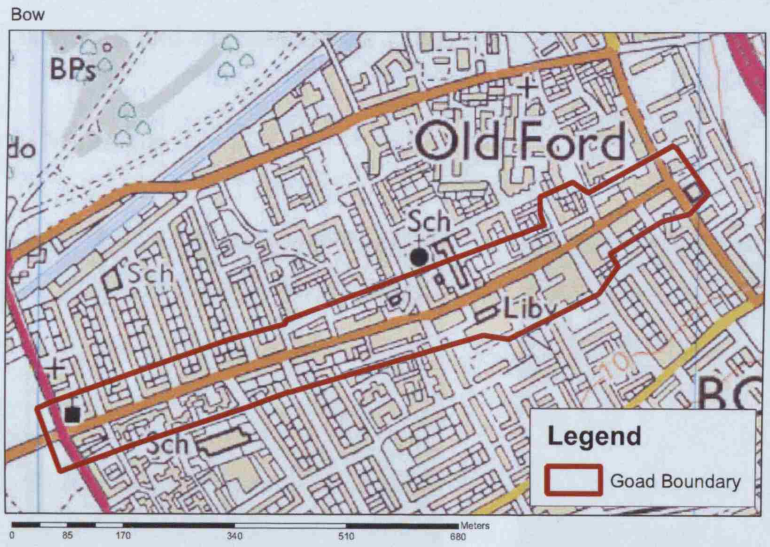

Figure 5.14: Bow highlighting Goad boundary

Victoria Park and the canal prevent the town from spreading any further north and delimit the extent of the retailing. Between the retailing strip and the park there is a narrow band of residential area. To the south there is a block of purely residential estates. The eastern boundary is accurate, ending as the Roman Road meets the T-junction of Parnell Road, where the retailing effectively stops.

Roman Road

History

Roman Road Market is really the retailing heart of Bethnal Green. It is only named Roman Road for the purposes of the Goad plans to differentiate between the western part of Bethnal Green, which is retailing, but not the town centre and the Roman Road market area. The market first started in about 1843, and was mentioned in Charles Dickens' Nicholas Nickelby (1838). It is famous for "cabbages" – these being discontinued lines, seconds or generally cheap clothing. It has always had a reputation for value.

Area Make-Up


a


b

Figures 5.15a and b: Roman road market

The Roman Road can be compared to other street market towns on the periphery of London such as Walthamstow. The market stalls themselves sell cheap products and are flanked on the High Street by down-at-heel retailing. The majority of the shops are independents, but retailing indicative of a poorer population abound – pawn shops, bookmakers, Woolworth's and charity shops.

Boundaries

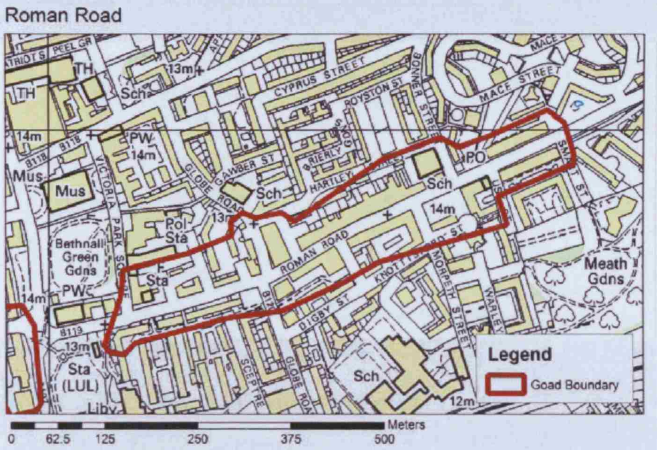

Figure 5.16: Roman Road highlighting Goad boundary

The northern and southern boundaries are delimited by the residential hinterland which directly abuts the retailing strip. The western boundary in the Goad dataset is created more for convenience to separate it from the western part of Bethnal Green. From the western boundary to Beacton Street, the centre is typified by high density retailing with no multiples, lots of closed units (although there is retailing on both sides of the road). The gaps and closed units may contribute to the Town Centres Project not identifying this area as towncentred.

The eastern boundary represents a true cut-off of retailing, which is to be expected with a Goad survey. In conclusion, it would appear that the narrow, linear form of the Roman Road Market area is too small for the kernel of the Town Centres Project to pick up. It may well also be the case that the transient nature of the street market retailing associated with the area may be of too casual a nature to register as businesses which in turn will result in Annual Business Inquiry forms not being completed.

Barnes

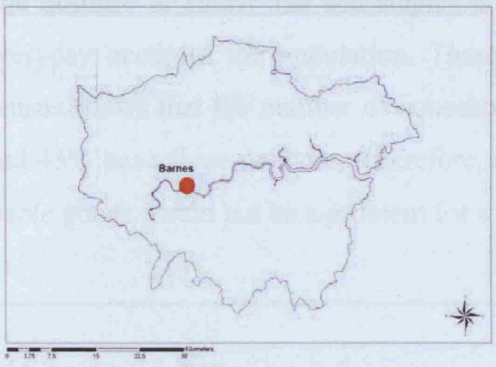

Figure 5.17: Location of Barnes in Greater London

History

One of the earliest mentions of Barnes is when it was given by King Athelstan to the canons of St Paul's. Known initially as Berne (Anglo-Saxon for barn) or Barn-elms it was a rural district alongside the river with a strong fishing tradition (Lysons, 1792). Barnes still maintains this rural feel, and the residential development there that does exist consists mainly of sparsely distributed large mansions and town houses.

Area Make-Up

Barnes is in the Richmond borough of London and is one of a number of Thames-side Surrey towns that are dotted around the royal parks and river. It is quite small and predominantly stocked with well-to-do smart houses and higher class retailing - estate agencies, antiques shops etc. A glance in an estate agents window shows that the house prices in Barnes are amongst the highest in London. The people using the town centre appear well-off, and the town has a prosperous feel about it.

The centre of Barnes is a small, thin strip of retailing in the centre of a mainly residential or parkland environment. There is almost no chance that this centre would make it into the Town Centres Project as it is mostly residential. The retailing clout it generates though, with the very high-class independents would make it a prime relocation venue and so there would be enough demand for a Goad plan to have been commissioned.

The absence of shops that sell staples is noticeable. This could not support the everyday needs of the population. There is a Waitrose in East Sheen and the census shows that the number of households with cars is around seventy percent and 45% have three or more. Therefore, travelling to a nearby town to shop for staple goods would not be a problem for a significant proportion of households.

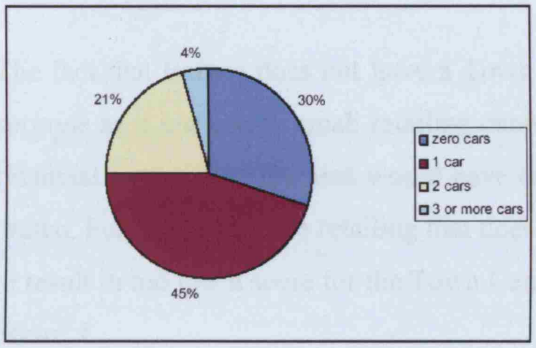

Chart 5.5: Number of Cars per household in Barnes (from 2001 Census of Population)

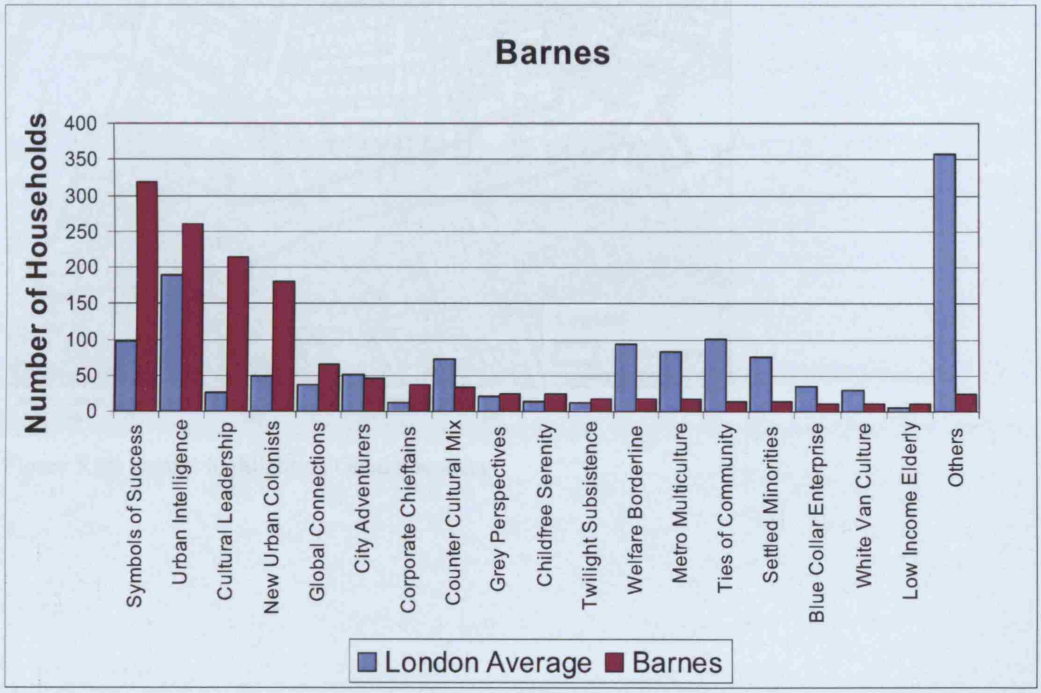

Chart 5.6: Geodemographic breakdown of Barnes

The four profiles that make up the majority of the demographic profile of Barnes are, as one would expect, affluent, successful and empowered people. All four profiles are above the mean for London and demonstrate the exclusivity of the area. This fits in well with the feel one gets from Barnes - that of an up-and-coming vibrant town, with wealthy and sophisticated residents.

Boundaries

The fact that Barnes does not have a Town Centres Project boundary is of little surprise as it has a very small retailing centre. One would suppose that the sheer financial potential of the area would have resulted in the Goad boundaries being drawn. Further to that, the retailing that does exist is very fragmented and is likely to result in too low a score for the Town Centres Project kernel to recognise it as a centre.

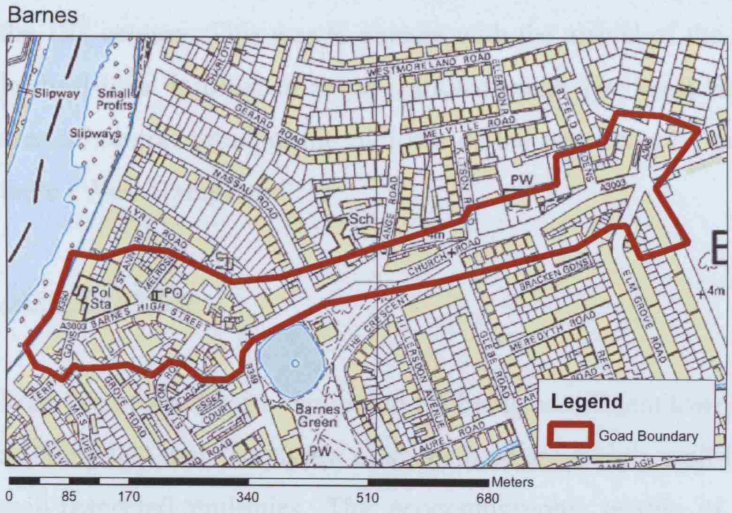

Figure 5.18: Barnes highlighting Goad boundary

West Hampstead

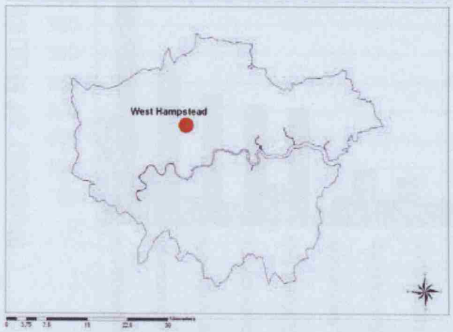

Figure 5.19: Location of West Hampstead in Greater London

History

West Hampstead was a small village and known as West End until the middle of the 19th century. This was to change with the arrival of the Metropolitan Railway in the 1870s. In order to avoid confusion with *The* West End, the main shopping area of central London, the builders of the new railway, named the station built there "West Hampstead" .

Area Make-Up

West Hampstead has a reputation for being an affluent town and strikes the visitor as being just that. The types of shops here are mainly well-to-do independents, or well-respected multiples. The geodemographic profile of the area draws very much from the profile "Urban Intelligence", with four other profiles accounting for the rest of the populace. All of them can be said to be "successful" profiles and describe West Hampstead as a vibrant and affluent district.

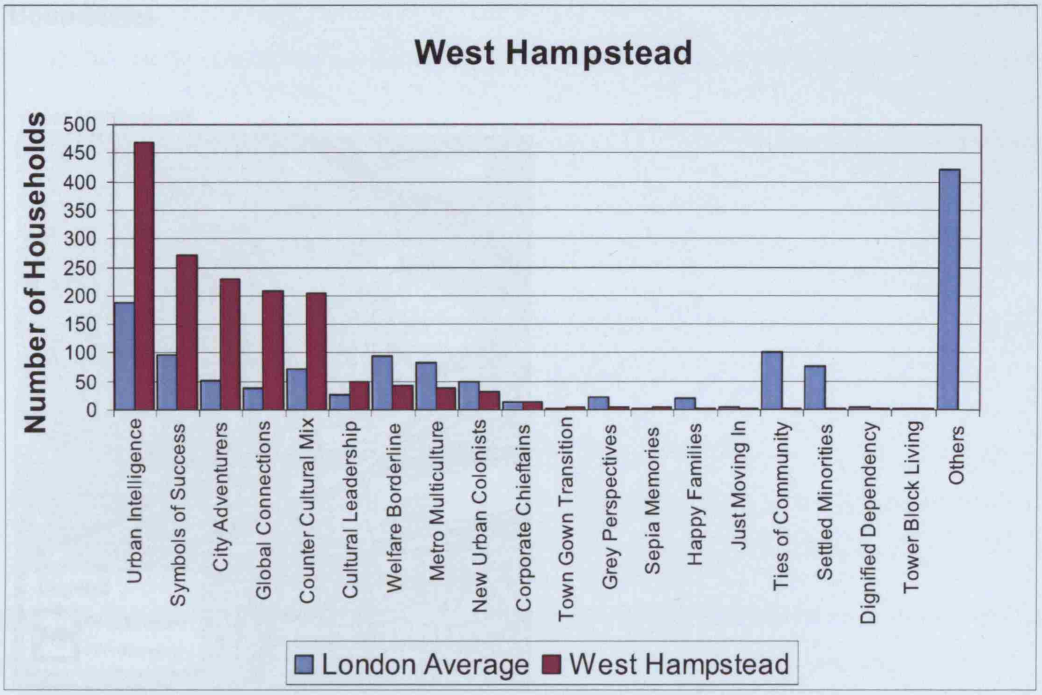

Chart 5.7: Geodemographic breakdown of West Hampstead

Structurally, West Hampstead forms a linear town centre, surrounded by residential estates. Heading southwards from the northern boundary (which is well and accurately delimited in the Goad plans) there is mainly high-class independent retailing, although the centre has a slightly incongruous timber merchants. The southern third of the area is characterised by boutiques and service retailing.

West Hampstead has a reputation for being an affluent town and strikes the visitor as being just that. The types of shops here are mainly well-to-do independents, or well-respected multiples. The geodemographic profile of the area draws very much from the profile "Urban Intelligence", with four other profiles accounting fro the rest of the populace. All of them can be said to be "successful" profiles and describe West Hampstead as a vibrant and affluent district.

Boundaries

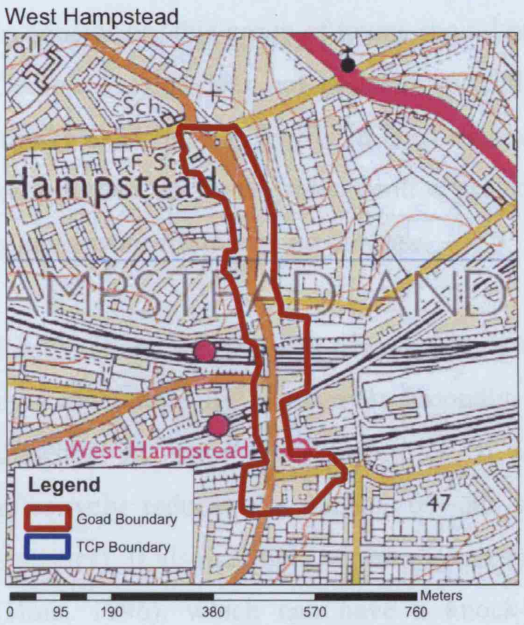

Figure 5.20: West Hampstead highlighting Goad boundary

The town is bisected by three railway lines which break up the continuity of the retailing surface. Furthermore, for short stretches the retailing is confined to only one side of the road, which as observed before, is likely to lead to the Town Centres Project not recognising the centre. Of all the town centres visited, West Hampstead was the most towncentred, or retailing centred place (based on personal observation) that was not picked up by the Town Centres Project.


a


b

Figures 5.21a and b: Fragmentation in West Hampstead. At both the north and southern boundaries, retailing continues, but the fragmented nature of it makes it too less dense for the Town Centre Project Kernel to pick up

Conclusion to Group Two.

In conclusion, this group of towns should provide the answers to where the Town Centres Project does not perform correctly in that it shows town centres that clearly exist (in that they have been requested by Goad customers) but have not been picked up by the town centres project. It would appear that there are two main reasons for this being the case.

Firstly, it appears that if a town centre is too thin, then there is a problem with over smoothing by the kernel. Secondly, if the town centre is fragmented or dissected by some other feature (such as a railway line or large road) this effectively reduces the density of unit postcodes (and therefore towncentred statistics). It also restricts access of customers to certain parts of the town centre (Hine, 1996), which can have a knock-on effect in terms of that centre's development or success. In a model that is effectively measuring density of a series of values attached to points, the lack of points or dispersal of them as a result of features in the urban landscape has a serious impact on the resultant surface. These factors are discussed in greater detail in Chapter Six.

5.1.4 Group Three: Present in Town Centres Project but not in Goad

Edgware and Burnt Oak

Burnt Oak

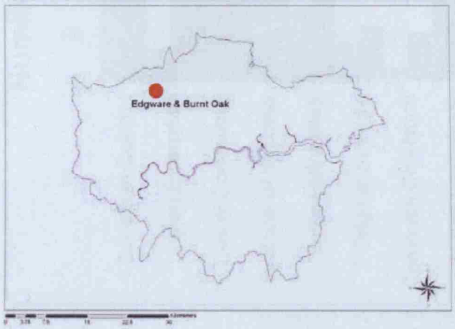

Figure 5.22: Location of Edgware & Burnt Oak in Greater London

History

Edgware and Burnt Oak are located in the borough of Barnet in the north west of Greater London. The Borough of Barnet has always maintained a strong relationship with London, as it is so close. It was incorporated as a London Borough in 1965. Barnet has three major roads passing through it and one, the A5, provides the backbone of the original roadside markets and now the western delimitation for both Burnt Oak and Edgware retailing centres. It is the A5, known as the Edgware Road or Watling Street that follows the route of the roman road. It is along this route that many of the satellite towns around London have sprung up, following the roman road.

Area Make-Up

Burnt Oak has the feeling of a healthy, but down-at-heel retailing core, located to the south of the more opulent Edgware. Shops sell cheap staples - lighters, household good, ethnic foods - and spill from these low quality independent retailing shops onto the streets is common.

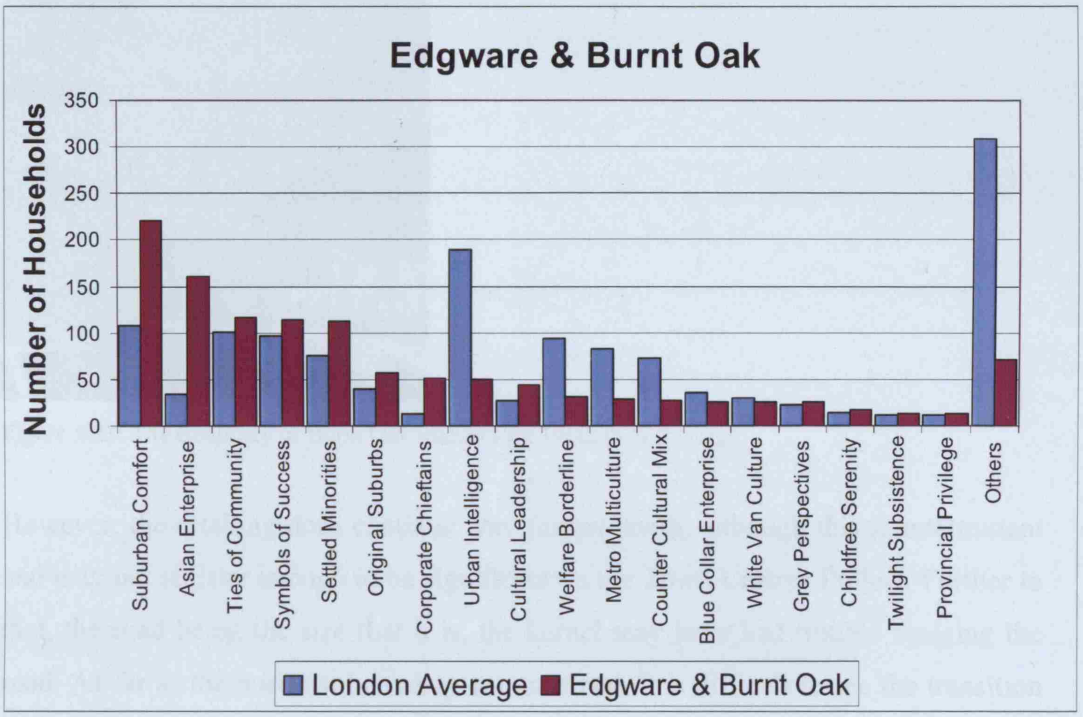

Chart 5.8: Geodemographic breakdown of Edgware and Burnt Oak

The two groups that make up the majority of Edgware and Burnt Oak all show a comfortable and cosmopolitan area, with a successful Asian population. The surrounding suburbs are constructed of large semi-detached and detached houses, often with more than one new car outside (see figure 5.23) and the geodemographic profile of this area is consistent with "families who are successfully established in comfortable … homes" (Experian, 2005)

Boundaries

Burnt Oak is arranged in a large "T", leading east from the tube station to the Edgware Road. The Edgware Road provides the western limit of both Burnt Oak and Edgware. The town centre sign, provided by Barnet Council, matches exactly the Town Centres Project boundary.

Figure 5.23: The Boundary of Burnt Oak matches the location of this sign

However, the retailing does continue way further south, although this is intermittent and may not register enough to be significant on the Town Centres Project. Further to that, the road being the size that it is, the kernel may have had trouble bridging the road. As far as the northern boundary is concerned, it is difficult to see the transition from Burnt Oak to Edgware or retailing to non-retailing. The whole of the Edgware Road has some kind of retailing presence, although there is clearly a gap between the two centres although it is difficult to see where this begins and ends.

The main retailing activity is north east of the Town Centres Project, the typical retailing type is low-status independents, and the only multiple is Superdrug. Heading south, there is a council office that is not in the Town Centres Project. After the Tesco superstore, the retailing is all on the west side of the road and continues for 250 metres beyond the boundary of the Town Centres Project.

Heading north, after East Road, retailing is only on the west side of the road, then intermittent on the east side of the road, including a Woolworths and an Iceland. The reason this does not register in the Town Centres Project is probably because it is either too intermittent or only on one side of the road. As in the case of West Hampstead this results in the area not being consider towncentred enough to be considered a centre.


a


b


c


d

Figures 5.24 a to d: Views around the junction of Burnt Oak Broadway and Stag Lane.

Edgware

History

Edgware is formed around the Edgware Road and its roots as a roadside market and inn town can still be seen in its urban form.

Area Make-Up

The Barnet Council sign marks the start of the true town centre very well, coinciding with a considerable increase in both the density of towncentred activity - retailing and offices - and a noticeable change in urban form.

Figure 5.25a: The southern Boundary of Edgware matches this sign

Figure 5.25b: This pub marks the north-western boundary of Edgware

Boundaries

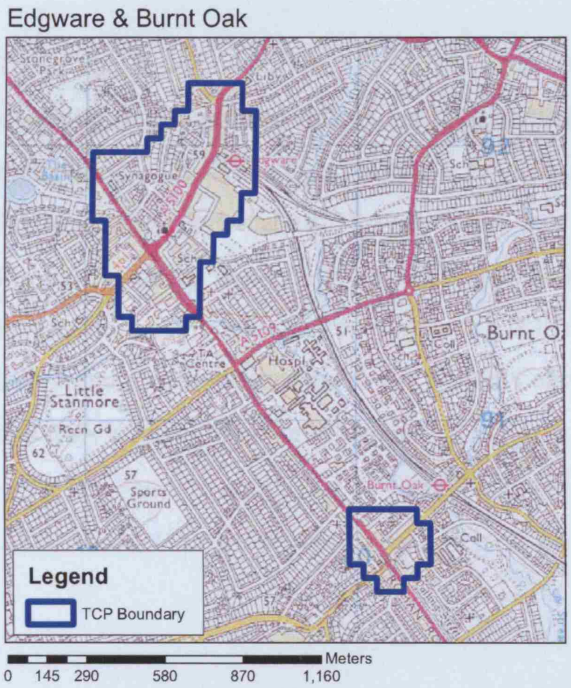

Figure 5.26: The boundaries of Edgware and Burnt Oak

The north westernmost boundary, where the town tails off in to well-to-do residential estates is marked with the pub (Figure 5.25b) - The Edge of Town. As we move to the east there is a residential estate, included in the Town Centres Project, which is clearly not a retail centre (Figure 5.27). One possible reason for this is that between the north-western tip and the north eastern tip - both of which are very retailing orientated - there is not enough distance for the surface interpolation to return to a point lower than the key contour for towncentredness. This is another potential flaw in the Town Centres Project methodology.

Figure 5.27: The area that is considered town centre by the Town Centres Project, but is clearly residential

The south-eastern boundary is no surprise at all. There is a very large modern shopping mall - packed full of the biggest names in retailing, surrounded by a busy high street, with all the usual outlets - MacDonalds, Superdrug etc - all big multiples. The Business Park called "Spring Villa Drive" probably pulls the Town Centres Project boundary out to the west. The southern tip is included in the Town Centres Project because it contains predominantly office buildings. Although this would make it a Town Centre according to the Town Centres Project, it is questionable whether this truly constitutes a "retail centre"

Kilburn

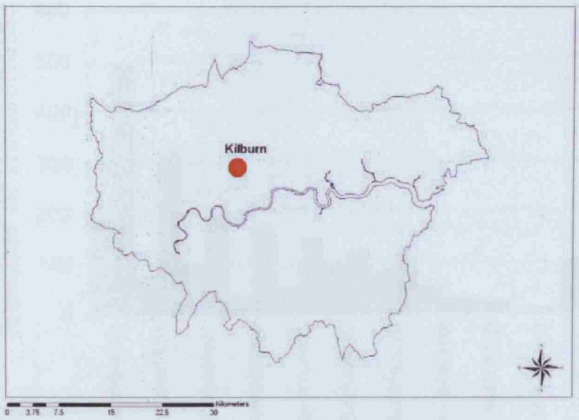

Figure 5.28: Location of Kilburn in Greater London

History

Located in North London, Kilburn has a history of high proportions of immigrant residents - stereotypically Irish. The predominance of Irish pubs suggests this history, although it is probably not as true now as in past years. Kilburn is a long, linear retailing centre, along the Kilburn High Road.

Area Make-Up

The presumption of a predominance of recent immigrants and the poorer social groups (bedsits and studio dwellers account for over half the population of the sector) - is reinforced by the mix of shops found at the southern part of the centre market stalls. Cheap clothes shops and ethnic shops abound, with the occasional multiple - though not the most salubrious multiples - Kwikstop, Poundbase and Foodworld for example. As we move toward the central section of the centre, the quality of shops increases, showing Kilburn to be of value as a retailing centre for a larger area than originally suspected. M&S, Boots and Dixons can be found.

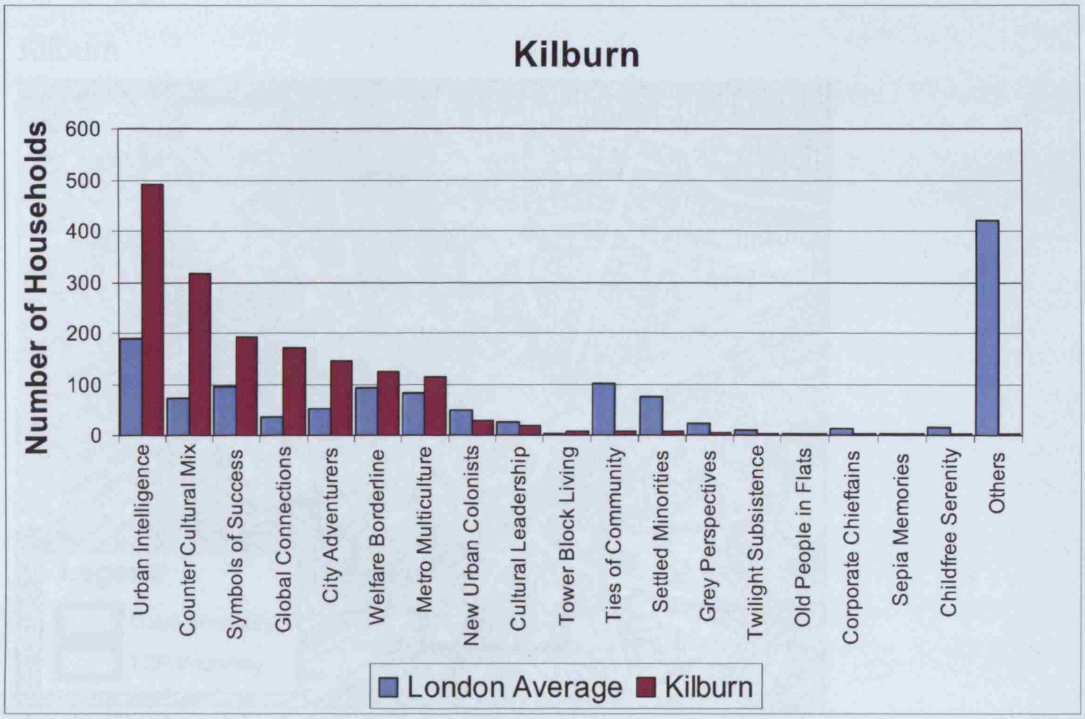

Chart 5.9: Geodemographic breakdown of Kilburn

The majority of the MOSAIC-based demographics of this area are shared between "Urban Intelligence" and "Counter Cultural Mix". These groups are typically made up of recent graduates, young professionals and first home buyers. The people belonging to the profile "Counter culture mix" are more likely to rent than own however. The conclusion is that Kilburn is a young, lively place, populated by people with some disposable income.

Boundaries

It is something of a mystery as to why Kilburn is not included in the Goad survey. There is plenty of retailing business in existence and one would assume that a survey would have been produced for future investment in the area. Perhaps it is the case that the relative status of the businesses in Kilburn is not high enough to merit prospective investors demanding a survey to be commissioned.

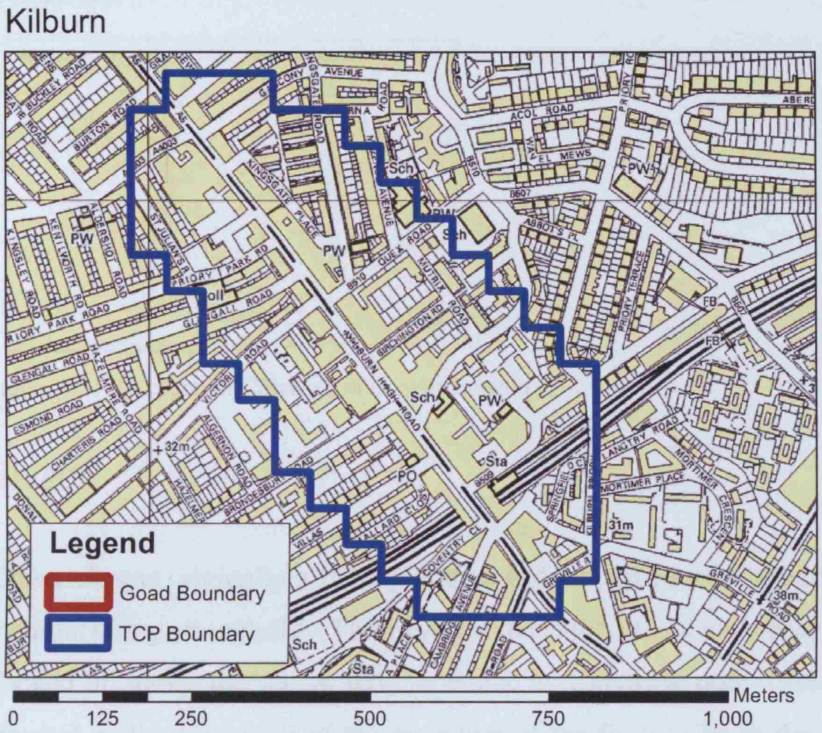

Figure 5.29: The Town Centres Project boundary in Kilburn

This may be true in the case of some of the smaller fast food outlets or specialist independents, but the presence of larger multiples and the fact that it is a evidently a thriving retail centre (evidenced by the large number of people in and around the shops) suggest that a survey should have been in existence.

Figures 5.30 a and b: North end of Kilburn High Street

Chiswick

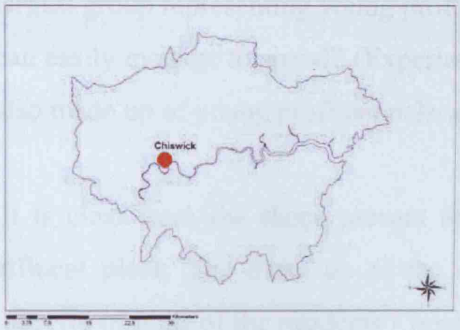

Figure 5.31: Location of Chiswick in Greater London

History

Chiswick was originally a fishing village and a point to cross the river. It was later a manufacturing stronghold - Thorneycroft the shipbuilders were based here and barges docked all along the ait. A ferry operated at Chiswick until 1930 and fishing was stopped partly as a result of the invention of the flush toilet in the Victorian era and the resultant pollution of the Thames. Since the war though, the area has become mainly residential and the river is a largely recreational facility (Bott, 1985).

Area Make-Up

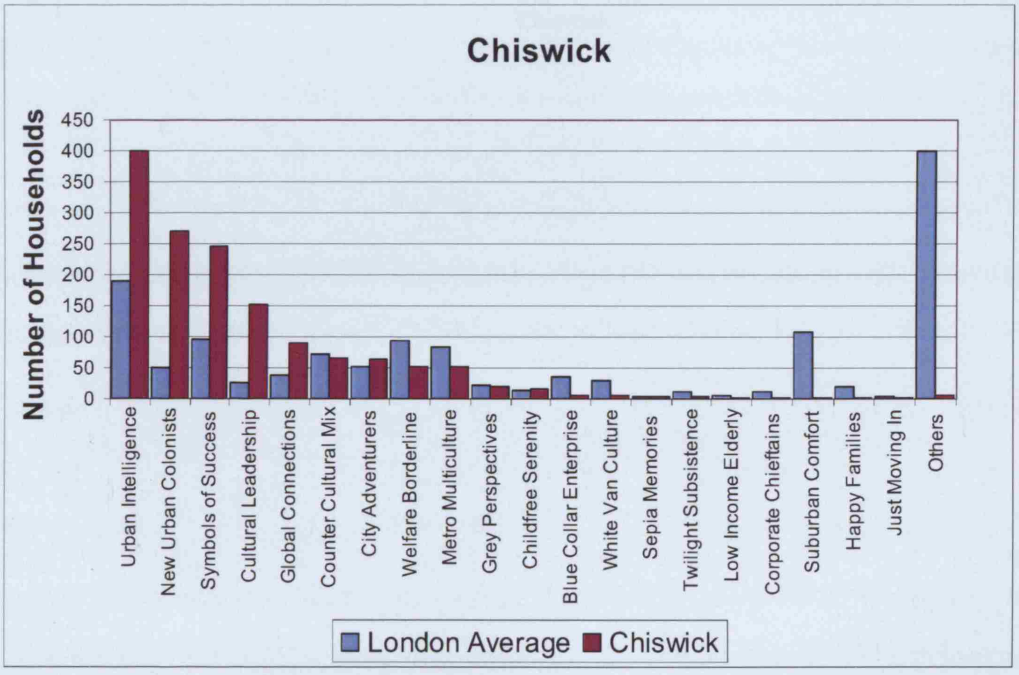

Chart 5.10: Geodemographic breakdown of Chiswick

"Urban Intelligence", a profile that contains many young and educated people, is the largest group representing young professionals who earn "significantly more than they can easily manage to spend" (Experian, 2005). The profile "New Urban Colonists" is also made up of young professionals with significant disposable income.

It is clear from the shops present and from the feel of the town that it is a very affluent place. The make up of the centre is of non-essential shops, suited to the lifestyle of most of the residents - bookstores, Gap, WH Smiths and no less than three Starbucks.

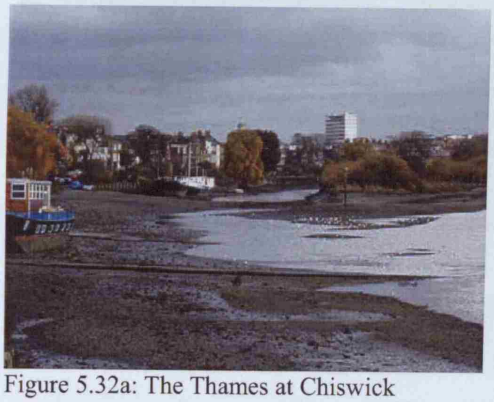

Figure 5.32a: The Thames at Chiswick

Figure 5.32b: The western boundary of Chiswick

Boundaries

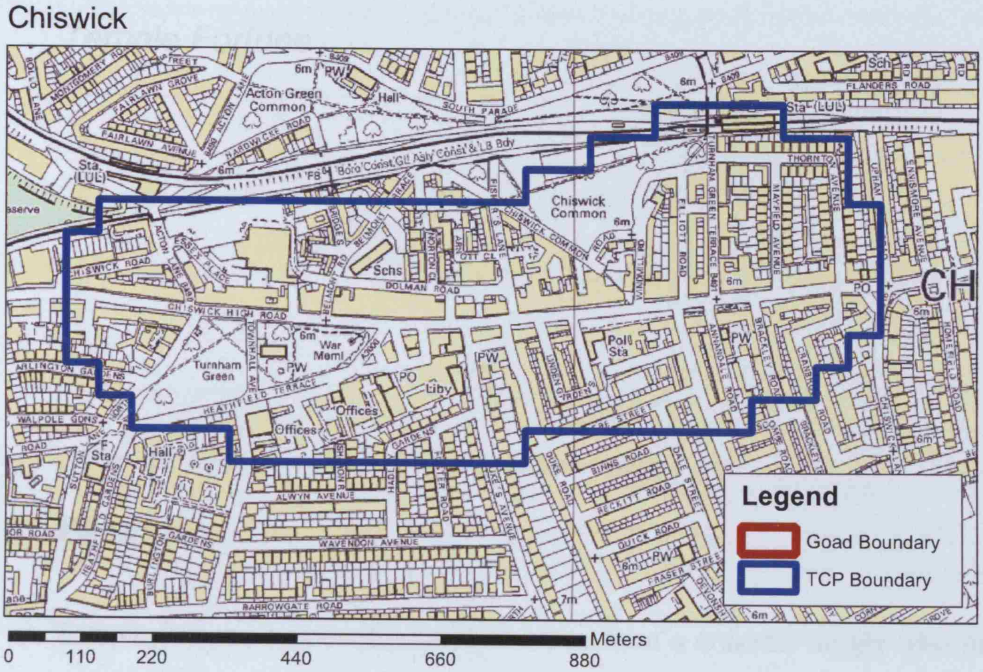

Figure 5.33: The Town Centres Project Boundary at Chiswick

The northern boundary of the town is described by the railway line and the southern boundary by a residential development to the southeast and a recreation ground to the south west. As a result of these binding factors, Chiswick is a linear centre development, following the route of the Thames.

5.1.5 Group Four: Goad is bigger than Town Centres Project

Temple Fortune

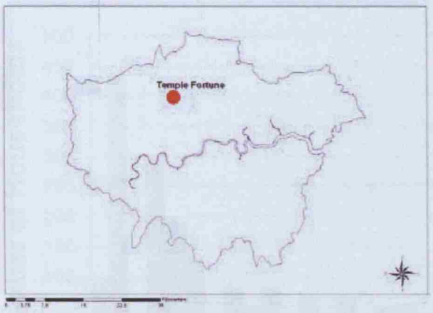

Figure 5.34: Location of Temple Fortune in Greater London

History

Temple Fortune supposedly takes its name from a crusader knight who founded the small settlement and lived nearby (Baker, 1998). It was not until the first half of the 19th century and the construction of the Finchley Road that it grew into a larger village. Temple Fortune is considered to be part of the Hampstead Garden Suburbs estate, although the retailing centred around the Finchley Road is actually the western boundary of the estate. So, although the retailing part of Temple Fortune dates from a later period, the eastern hinterland is all of the famous suburban design.

Area Make-Up

Temple Fortune has a well-to-do feel about the place, with high-class independents the most common form of retailing from the southern boundary until the central section of the town. The retailing remains largely made up of independents until the BMW garage near to Hampstead Way. Past Hampstead Way there is a cluster of multiples, with an M&S, Oddbins, Boots, WH Smiths, Starbucks and a Waitrose all within a 50m zone.

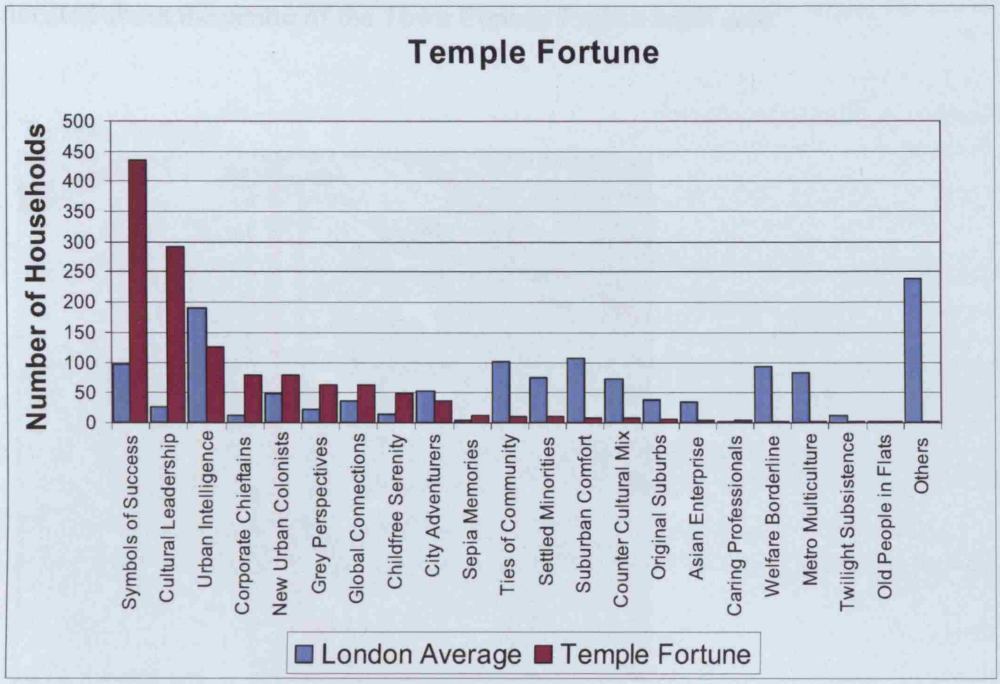

Chart 5.11: Geodemographic breakdown of Temple Fortune

The two strongest geodemographic profiles are "Symbols of Success" and "Cultural Leadership" showing Temple Fortune to be an affluent area with successful people. This is evident from the retailing found in the centre and also from the residential buildings surrounding.

Boundaries

The southern edge of what could be called the retailing centre of Temple Fortune is clearly demarked at the southern boundary, with residential housing on both sides of the street abutting the retailing zone at precisely the point that the Goad map demarks. There is roughly 120 yards of retailing on the west side of the street, with no empty units and all seemingly well-to-do independent retailers with no multiples, while the south side of the street is entirely housing.

The point at which the Town Centres Project recognises retailing activity is the point at which retailing is found on both sides of the street. There seem to be a

high number of employees at the accountancy firm north of the police station, located about the centre of the Town Centres Project retail core.

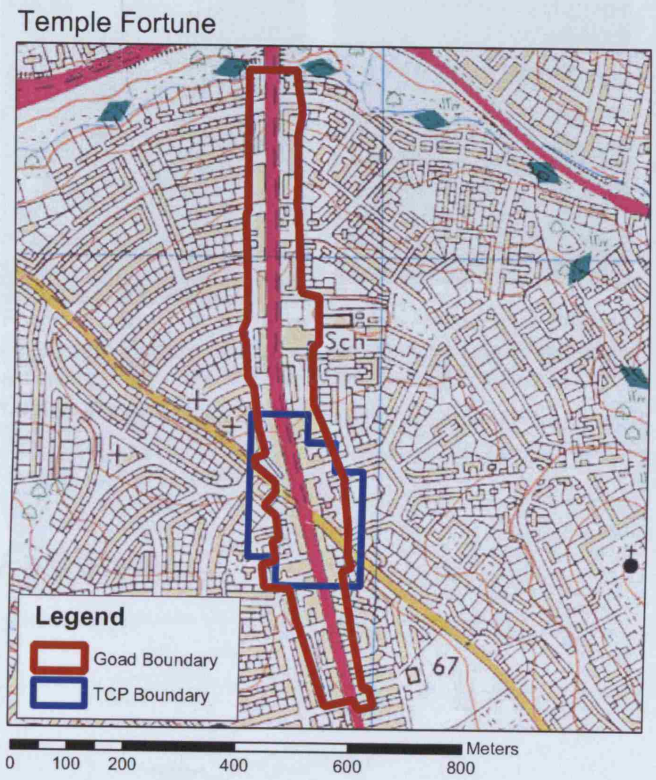

Figure 5.35: Goad and Town Centres Project Boundary at Temple Fortune

After 'William Hill' the retailing is all independent, but far less dense - falling under 50% retailing - with the Waitrose, interestingly enough, falling outside the Town Centres Project zone. This may be because the postcode centroid to which it is assigned falls slightly to the south of the actual building, or it may be that because there is no retailing on the opposite side of the roads, the level of retailing activity (or town centres activity) is not high enough to push the surface above the key contour.

All of the area encompassed by the Goad plan is made up of retailing outlets, but north of Clifton Road, it is only on one side of the street and made up of independents. The upshot of this appears to be that the Town Centres Project does

not recognise it as a Town Centre, whereas the surveyed approach of Goad has included the stretch of street north of Clifton Road.

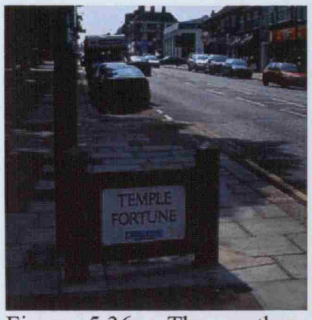

Figure 5.36a: The northern edge of Temple Fortune, according to the Town Centres Project

5.36 b: Residential housing on the west side of the street north of Clifton Road

5.36 c: The southern Edge of Temple Fortune

East Sheen

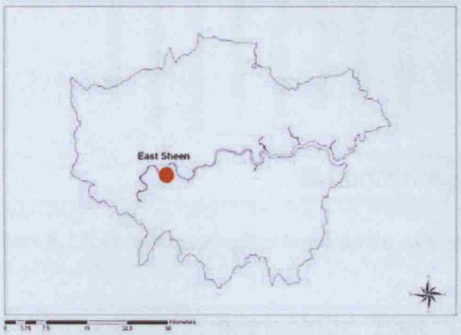

Figure 5.37: Location of East Sheen in Greater London

History

East Sheen, like Richmond and Barnes, was probably a fishing village until a) the growth of London expanded enough in terms of transport nodes and conurbation to merit the areas becoming a suitable commuting residence and b) the Thames became so polluted as a result of flushing toilets that fishing became economically unviable. The name, as mentioned in the previous section, probably comes from the original name for the manor house of Richmond - Shene.

Area Make-Up

East Sheen is now clearly a wealthy commuter town and the "feel" of the town reinforces this. The pedestrians are smartly dressed and the retailing around the centre of the town has an up-market feel about it.

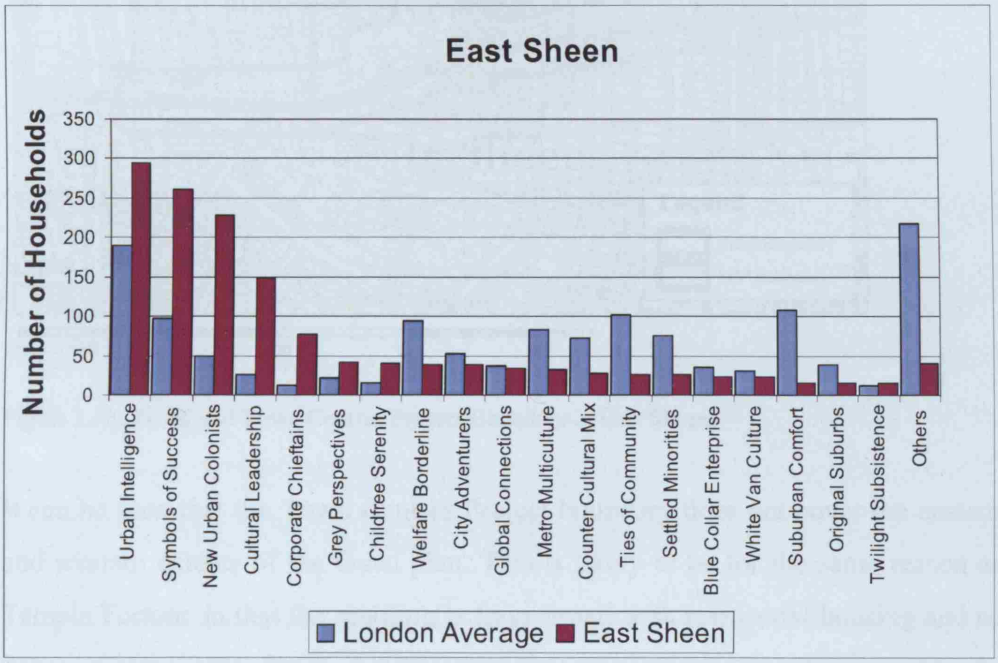

Chart 5.12: Geodemographic breakdown of East Sheen

In term of geodemographics, East Sheen is dominated by the types "Urban Intelligence", "Symbols of Success" and "New Urban Colonists", all of which are typical of relatively well-off and well educated populations.

Boundaries

Similar to Temple Fortune, East Sheen is predominately a linear town centre, although there is an office centre to the north of Upper Richmond Road West, which drags the town centre north slightly. Upper Richmond Road West is the main high street of East Sheen and the Town Centres Project sticks closely to the central part of the road.

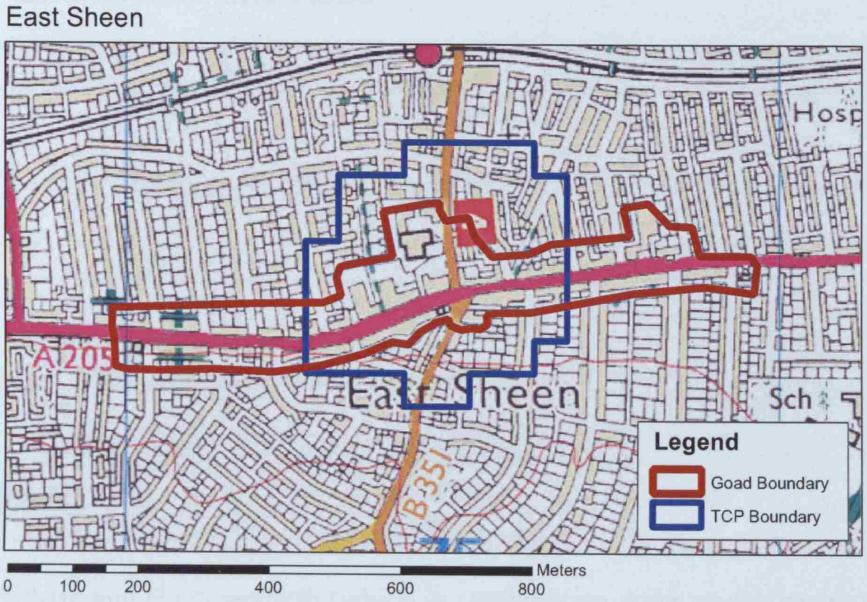

Figure 5.38: Goad and Town Centres Project Boundary at East Sheen

It can be seen that the Town Centres Project boundary does not cover the eastern and western extents of the Goad plan. This is likely to be for the same reason as Temple Fortune in that the retailing is fragmented with residential housing and so does not represent a dense enough concentration to appear as a town centre. As can be seen from Figure 5.39, the western boundary of the Goad extent does contain some retailing but is very fragmented with residential housing.

Figure 5.39: Western Boundary of East Sheen

Fulham North End Road

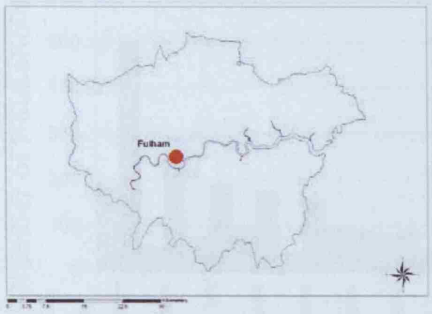

Figure 5.40: Location of Fulham in Greater London

History

Fulham and Hammersmith (which in combination make up the parish of Fulham) were largely rural areas until the mid to late eighteenth century. Peter Foot in his General View of the Agriculture of Middlesex stated that the barley grown in Fulham was the "most thin-skinned and mellowest in England" (1794). The arrival of the railway in the form of the extension to the metropolitan line changed the area completely. A massive house building scheme was initiated and the population rose from 10,000 in 1801 to 250,000 in 1901 (Whitting and Fulham History Soc., 1970).

Fulham was made a metropolitan borough in 1899, along with Hammersmith (Whitting and Fulham History Soc., 1970, Feret, 1900, Hasker, 1981). The Victorian roots of Fulham remain to be seen in the architecture of the shops.

Area Make-Up

The most common profile in Fulham is "Urban Intelligence", which is also far higher than the London average. This profile consists largely of young wealthy and independent people which sites well the popular image of the Kings Road in Fulham being the epitome of London style and fashion.

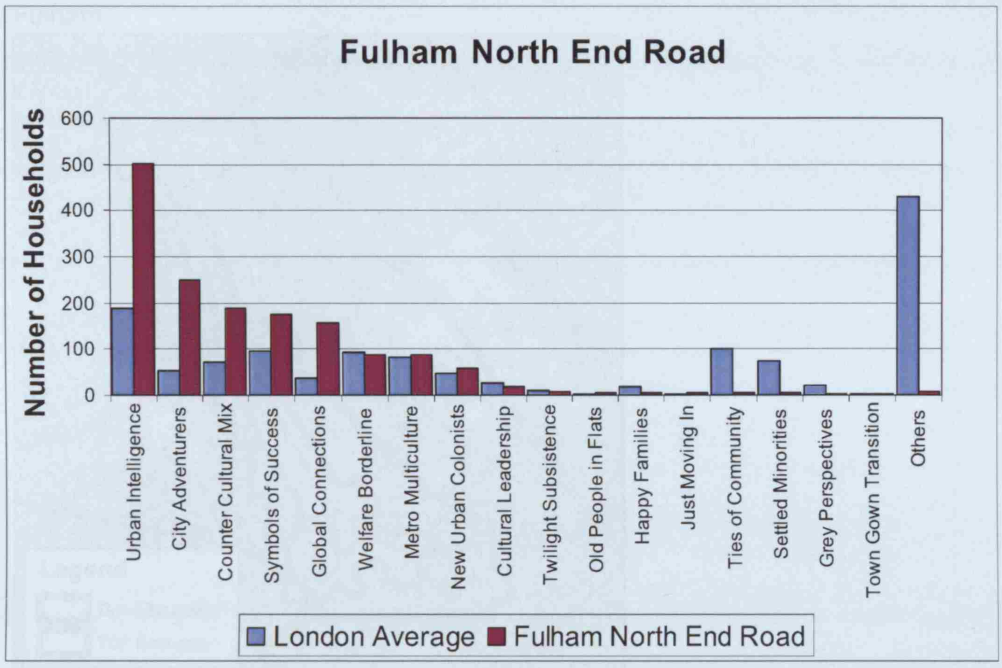

Chart 5.13: Geodemographic breakdown of Fulham North End Road

Boundaries

The most southerly section of the town is where the Town Centres Project boundary delimits it. It is populated with well-known national high street brands, such as Boots, Marks and Spencer and Safeway. The highest concentration of these shops coincides with the retail core. The problem is that the town centre continues to the north, as the Goad plan depicts.

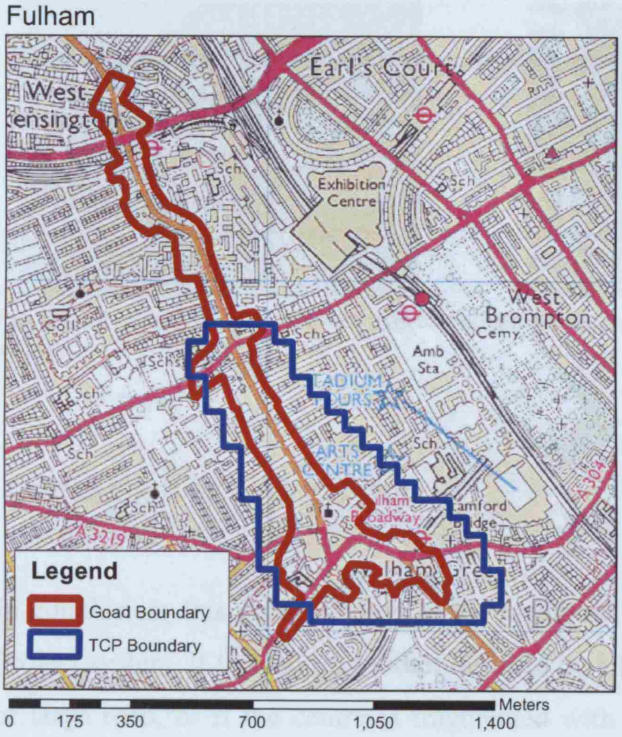

Figure 5.41: Goad and Town Centres Project Boundary at Fulham

The town centre in total is dissected by two main roads (Maud Street and Lillie Road) which have the effect of cutting the town centre into three sections. This may explain why the Town Centres Project does not pick up the two northern sections. The most northern end (which is included in Goad but not in the Town Centres Project evaluation) is clearly another case of fragmentation or a retailing centre not dense enough to rise above the key contour. It is quite apparently a retailing area, but has not shown up in the Town Centres Project boundary creation.

This is more evidence to suggest that the Town Centres Project does not deal well with linear features cutting across or through town centres. When they do, the density of the area is dropped below the key contour and existing town centres are not picked up.

A b

Figures 5.42 a and b: The southern part of Fulham North End road, showing national high street stores

Conclusion to Group Four

In conclusion, this group highlights the weakness inherent in the Town Centres Project system. If the centre is either bisected by a linear feature such as a railroad or large road, or if the centre is fragmented with non-retailing units, the kernel does not recognise the centre as being densely "town-centred" enough. Another problem is that if one side of the road is either not retailing or as low as 50% retailing, then the density will drop below the required limit.

5.1.6 Group Five: Town Centres Project is bigger than Goad

Wembley

Figure 5.43: Location of Wembley in Greater London

History

Wembley is located in the north western / central area of greater London and until the late eighteenth century was a small hamlet of about 40 houses. When the Harrow Road was built a turnpike was sited at Wembley and later a rail link was added. A church was built (which made Wembley a separate parish from Harrow), followed by suburban housing with the result that Wembley had become an Urban District by 1895. The Wembley site was chosen to host the British Empire exhibition of 1924, which changed the shape of Wembley for ever. The stadium was built to hold the 1923 cup final and the Great Exhibition held in Wembley Park.

Area Make-Up

Wembley is still most commonly associated with Wembley Stadium – the English National Stadium and although the famous "twin towers" have now been demolished, the rebuilding of Wembley stadium and the "Wembley Complex" still dominates the eastern part of the town. The presence of several megalithic concrete buildings, now long since abandoned (originally built sometime in the 1920s and so either connected with the exhibition or the relics of long-since dead

manufacturing or warehouse industry) contribute to the desolate feel of that area of the town. The grandiose construction is still impressive, but as so much of it is now unused or unusable it in fact creates acres of "dead space" where no useful activity can occur.

Walking west from the stadium complex along the Harrow Road, the town centre changes noticeably to the west of the technical college. The shops from that point to Central Square shopping centre are generally multiples, of mixed sophistication. Big-name multiples such as Primart, Argos, Dixons, Clarks, Holland & Barrett and Marks & Spencer, sit shoulder to shoulder with pawn shops and amusement arcades.

Wembley has an extensive Asian community, and the western area of the town centre is known as the Asian jewellery quarter. It holds the largest Diwali festival outside India, and the area is abundant with shops selling Indian jewellery, sari shops and south Asian and oriental cuisine.

The eastern end of the town is dominated by offices, schools and the now fairly shabby-looking Wembley complex, which contains several immense, but unused concrete buildings, the conference centre, the stadium and arena. As a result probably of the high concentrations of offices in the eastern end, there are numerous restaurants.

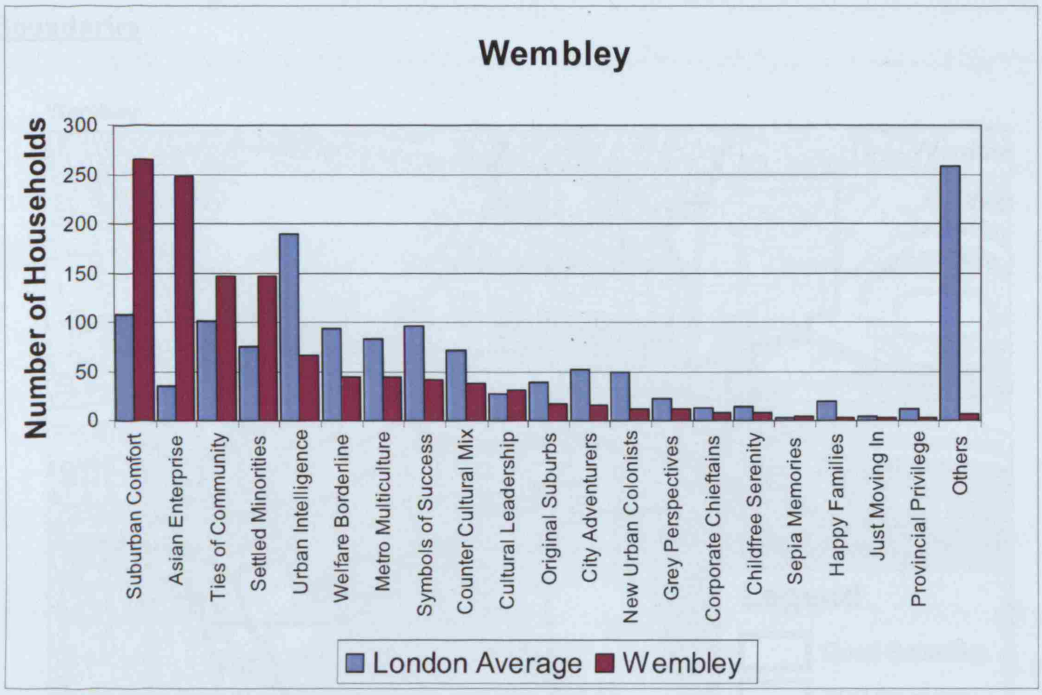

Chart 5.14: Geodemographic breakdown of Wembley

Mosaic profiles such as "Suburban Comfort" and "Asian Enterprise" prevail, between them accounting for almost half of the populace. Suburban Comfort is a profile associated with interwar semi-detached houses and a mixed social and ethic background (Experian, 2005).

As far as work within the town centre is concerned, the Asian Enterprise residents have had an obvious effect. The Diwali lights and Indian jewellery shops are indicative of the tendency of this group to channel money and transactions through traditional South Asian networks and extended family groups rather than traditional British markets. In other words, the Asian Community in this sector has made a significant and vibrant impact on the urban form of the town centre.

Boundaries

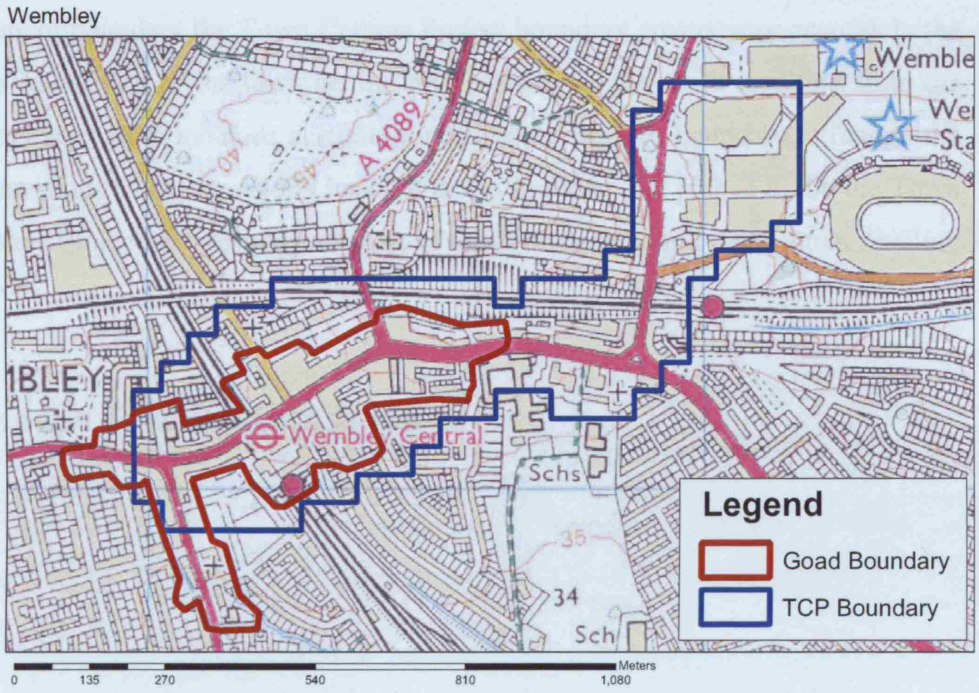

Figure 5.44: Wembley highlighting Goad and Town Centres Project boundaries

The town centre is bisected by one north/south railway line and bounded to the north by another. This results in the town centre ending at the northern boundary – not so much as a result of the railway creating too large a gap for the kernel to cross, but because the residential area behind it and King Edwards Park are not town centred enough. The eastern edge of the centre is dominated by the Wembley Complex.

Surprisingly, the Town Centres Project takes account of this area, whereas the Goad plan does not. It would be expected that the Town Centres Project would not cover this area, as unit postcode points are too sparse and the primary activities of the business are not "towncentred" enough. On the other hand, one would expect Goad to cover this eastern extent of the town. Although the area east of Cecil Avenue is broken up with a school and some offices (which may not be of enough interest to Goad surveyors) it still has a strong proportion of independent retailing.

Moving south west into the town, the easternmost edge of the true "town centre" is not picked up by Goad, despite having a healthy retailing turnover. Along the southern boundary the Town Centres Project boundary covers very accurately the true delineation of the town centre, plus a buffer to the south resulting from the kernel size. Both methods accurately portray the western boundary, although the Asian shops along the A4089 heading to the south are not picked up by the Town Centres Project as a result, probably, of too little density and intermittent retailing activity.

Camden Town / Primrose Hill

Figure 5.45: Location of Camden in Greater London

History

Camden is in a relatively central London location. It is a short bus ride from the Euston Road / Kings Cross area and accessed via the Northern Line. Camden was founded in the eighteenth century (named after the landowner Charles Pratt, 1st Earl of Camden) and was nothing more than a handful of buildings around the road out of London. Chalk Farm was similarly undeveloped, being literally just a farm, then a tavern isolated in some fields. The building "Chalk Farm" is still in existence as a restaurant.

Once the Regent's Canal was built in 1820, the town began to develop quickly and by the end of the nineteenth century was a significant town. By the 1970s, when the Camden locks, wharfs and buildings were converted into a craft market,

Camden became a top retailing and tourist location, with the Sunday market still attracting great numbers of foreign tourists (Harriss, 1996). As a result it is difficult to compare Camden to any other retailing location in London, let alone the UK.

Figures 5.46 a – f: Views around Camden. a) the northern boundary, b) the boundary of Goad and Town Centres Project, halfway up Camden High Street, c) the southern boundary d) Camden High Street, e &f) the famous markets of Camden (Harriss, 1996)

Area Make-Up

There are a number of well-to-do independents and chains such as Nandos and Belgo. The market is exceptionally famous and successful and responsible for a large proportion of the retailing success of the town, yet does not register on the Town Centres Project as a result of the vagaries of postcode geography and the coarse kernel. The Camden Road – to the east of the High Street has some low intensity retailing, which probably does reach the minimum for a town centre as far as the Town Centres Project is concerned.

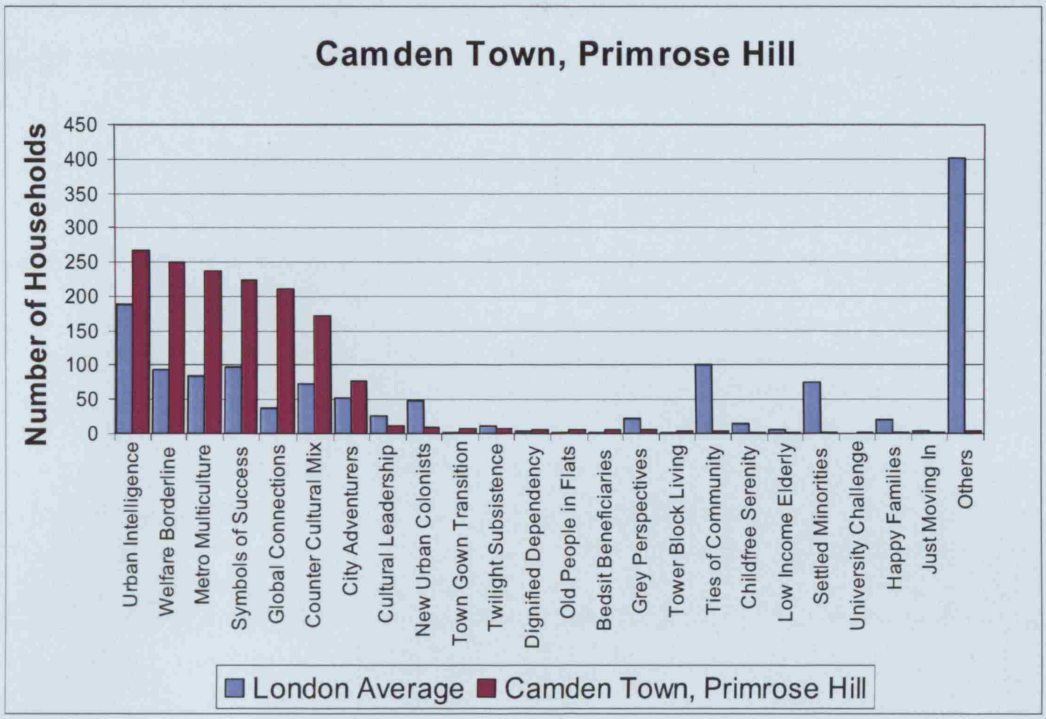

Chart 5.15: Geodemographic breakdown of Camden Town/Primrose Hill

There is a real mix of profiles in Camden. "Symbols of Success" and "Urban Intelligence" suggest a population that is well-off and well educated, yet "Welfare Borderline" and "Metro Multiculture" reflect the council estates and poorer surrounding areas.

Boundaries

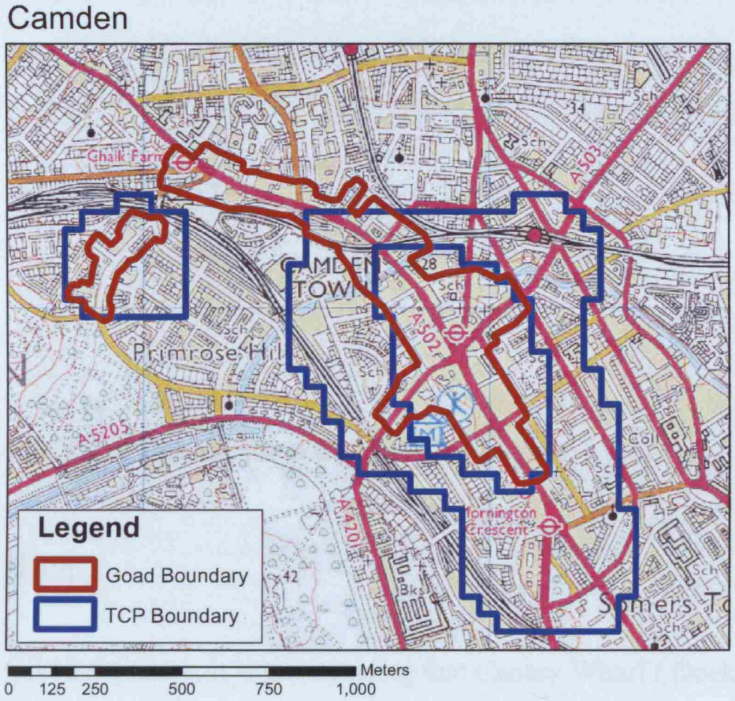

Figure 5.47: Goad and Town Centres Project boundaries in Camden Town and Primrose Hill

The northern boundary of both Goad and Town Centres Project match pretty well. However, this is probably more by luck than judgement. The linear barrier of the canal and the non-postcode market to the north of the canal combine to disperse the density of towncentredness and as a result, this area is not considered town centre. However, the retailing continues up the Chalk Farm Road and the southwest to Primrose Hill.

The western boundary of the town centre is described by the railway line and Regents Park. There is a thin buffer of residential housing between the High Street and the railway line, but this is thinner than a kernel. The southern boundary is exactly as we would expect. It matches the extent of retailing (with a 180 metre buffer as a result of the kernel) extremely precisely.

Docklands and Canary Wharf

Figure 5.48: Location of Docklands in Greater London

History

Given the name, it is unsurprising that Canary Wharf / Docklands can be found on the river, yet in this age the name conjures up much more than a functioning dock. Any London resident could not have avoided the well-reported transition of the unpopular eyesore of the disused docks to the glimmering symbol of Thatcherist conspicuous consumerism. It remains a symbol of the resurgence of the British economy and London in the 1990s.

The Isle of Dogs was originally known as Stepney Marsh and colloquially referred to as the Isle of Dogs because of the location there of the Royal Kennels. The use of the area as a dock started in the Elizabethan era, with the expansion of the city of London and increase in trade. At the beginning of the nineteenth century the West India docks were opened, with the building of the East India docks some time later. The stretch of wharfs and docks from the Tower of London to Barking was the largest port in the world.

The growth continued into the twentieth century and by the early 1960s had reached its peak. In 1961 the docks handled over 60 million tons of cargo. However, by the early 1970s the docks were finding it difficult to compete and

between 1966 and 1976 20% of all jobs in the area were lost (al Naib, 1997, al Naib et al., 1986).

In the 1980s the London Docklands Development Corporation was created in order to bring new jobs and investment into the area. Tax breaks were given to promote the redevelopment of industrial land. In 1986 the Dockland Light Railway (DLR) was approved, creating the transport infrastructure necessary for the redevelopment to be achieved and from 1987 onwards the Canary Wharf development began. The story since then is of continuous growth, the Canary Wharf Tower itself (visible from almost every location in London) is a symbol of the commercial and economic revival of the 1980s and 90s after the dismal climate of the 1970s. It can be compared to Camden Town in one distinct characteristic; that neither of them can truly be compared to anywhere else, in London, the UK or probably the world. The sheer volume of sales and customers, along with their allure as a tourist destination, mean that both centres really defy comparison.

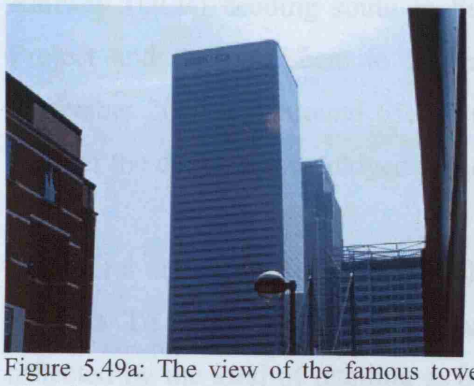

Figure 5.49a: The view of the famous tower, taken from the approach from Bethnal Green

Figure 5.49b: banners showing the store names in the Canary Wharf shopping mall

Area Make-Up

Canary Wharf is a series of chrome and glass high-rises, situated around the former docks – now the home of wharf side cafes. In the main shopping arcade, under one of the towers, there is an extensive range of the top end of exclusive retailing. Designer brands nestle with the day to day facilities for office workers – sandwich shops, upper-class soup kitchens and so on. Figure 5.49b demonstrates

the nature of the retailing to be found. All brands are high class multiples, with almost no independents.

Considering its position as the flagship of economic resurgence (not just in London but within Britain as a whole) there is the hint that Canary Wharf needs to succeed, or at least to be seen succeed. As a result of this need, retail activity continues with a kind of fervour, and consequently Canary Wharf contains some of the most prestigious and expensive of products and outlets.

It is clear from the buildings themselves, the types of shops and restaurants, the kind of people who use the area and from the buzz of frenetic "busyness" that one picks up here that Canary Wharf is a place that is going somewhere, at a brisk and purposeful pace. There are security guards patrolling the centre, encouraging beggars or the homeless to move on and everyone is dressed well and expensively. It is an extremely affluent area and conspicuously so; an island of flaunted wealth in the middle of the traditionally poor and working class docklands of East London. Millwall can be seen from the Docklands Light Railway (DLR) heading south to the southern boundary of the Town Centres Project and the two seem to be incongruous. The working population as of December 2004 was around 65,000 (Canary Wharf Group, 2005), over half the number the docklands employed in their heyday.

There is a dichotomy in Docklands that can be observed from the urban form of the area. To the north, in Canary Wharf the area is extremely affluent and this is reflected by the kind of retailing to be found there within the shopping mall and by the profiles "Urban Intelligence" and "City Adventurers". However, the area to the south of the wharf, which is clearly of a less affluent nature, gives rise to the profiles "Welfare Borderline" and "Metro Multiculture"

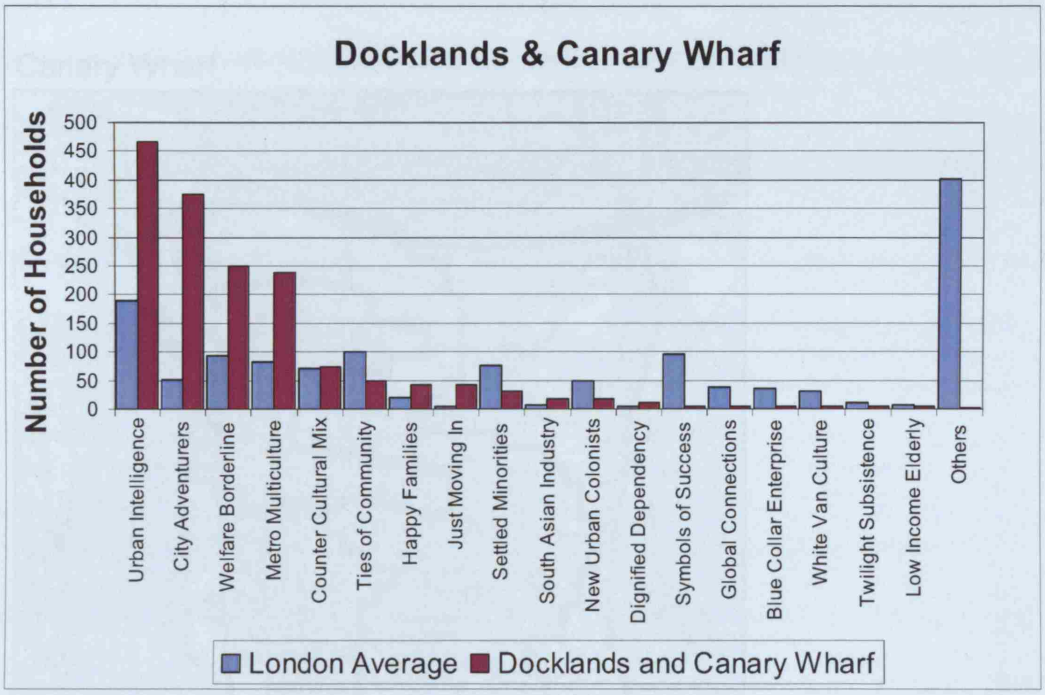

Chart 5.16: Geodemographic breakdown of Docklands and Canary Wharf Area.

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Boundaries

The northern boundary of the centre is delimited by the major Aspen Way Road. The residential area north of that is made up of low-rise council estates and former Tower Hamlets towers, now in the process of being demolished. However, as we cross into the centre over one of the northern bridges, it is immediately apparent why the eastern and western boundaries of both Goad and Town Centres Project match and represent accurately the boundary of the centre. It is difficult to see how a mistake could be made as the area is not only clearly delineated, but surrounded by water.

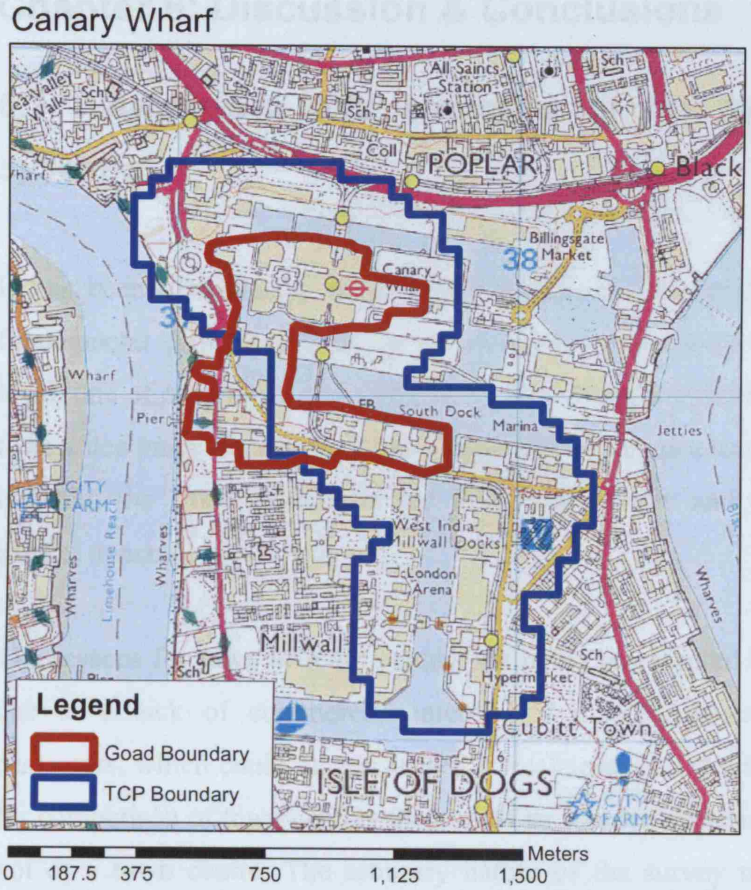

Figure 5.50: Canary Wharf and Docklands highlighting Goad and Town Centres Project boundaries

Having matched up until this point, the two methodologies now show serious dissimilarities. The Goad boundary stops clearly at the top of the Millwall inner dock, whilst the Town Centres Project stretches down to the south to cover the whole of the area surrounding Millwall inner dock. The area south of the Marina contains two self-contained shopping centres of its own (although not in the same league as the main Canary Wharf area) which appear to be built to serve the local community. The London Arena is also in this zone along with a hypermarket right on the southernmost edge. This hypermarket is probably so weighty that it has dragged the Town Centres Project boundary down to it, as the two smaller shopping centres are probably not big enough and probably too sparsely distributed to make the Town Centres Project surface high enough to register.

Chapter 6: Discussion & Conclusions

6.1 Weaknesses and strengths of the two delimitation systems

It has been discussed at some length already in this work, but to recap, the fundamental difference between the two approaches is, at the most superficial level, one of objectivity and subjectivity. The Town Centres Project was intended to produce many boundaries from a large data source in a standardised manner. In contrast, the Goad boundaries are made individually and only in response to market demand.

The reasons for town or retail centres not being represented by Goad is probably due to a lack of commercial interest, or market demand from Experian's customers, which could be considered a weakness. In order to be useful as a tool for comparison of town centres there must be standard criteria for the inclusion or not of a town centre. The arbitrary nature of the survey method can result in boundaries being drawn in an inconsistent manner, but the greater problem is the patchy manner in which the Goad plans are commissioned. The commercial aspect of the business means that towns are only surveyed if commissioned, or if demand for a survey is envisaged. So, to sum up, the coverage of towns is inconsistent and the boundaries drawn are arbitrary.

However, the human touch that gives the Goad plans their inconsistency also serves to make the boundaries more accurate in some cases. Where there has been some error in surface creation or the density of towncentredness falls below the key contour, the presence of surveyors *in situ* can result in a more accurate delimitation.

In the case of the Town Centres Project, there are issues concerning the correct identification of town centres revealed by this work. These issues can be classed as follows:-

i. issues with digital data
ii. issues with attribute data
iii. issues with surface production and selection

In the first case, issues with digital data, the problem could be considered a universal one in the use of GIS to model the world. The model and subsequent analysis can only ever be as accurate as the digital data used to produce the model In this case, the spatial framework used to create the surface of town centeredness is the unit postcode. There are two main potential sources of uncertainty regarding the unit post code. The first concerns the shape of postcodes. Unit postcodes are most commonly represented as points and in the case of the Town Centres Project it was these points that were used in the creation of a surface. The addresses within a postcode unit should really be thought of as a route (rather than a polygon or point) and so centroids of postcode units are somewhat misleading. With specific relevance to this project they also have the potential to be in the wrong place. The effect of this is that a peak of retailing activity can be shifted away from its true location. This can either result in a town centre being placed incorrectly, or the density of activity being diluted.

The second problem with postcodes is the frequent use made of PO boxes by large retailing companies. Head Offices or customer relations centres for large companies will often employ a PO Box address, based at a local Post Office depot, for obvious reasons of managing large quantities of post. The problem in this case is that the location of these PO boxes is most normally given as the centroids of the postcode sector. This creates an obvious problem – that all activity associated with the PO Box address will be assigned to the wrong location.

This problem can be compounded with the addition of the second issue – that of attribute data. One of the key factors in the surface of town centeredness is the ONS Annual Business Inquiry. One important component of it describes the primary activity of a company, using standard industrial codes. If, for example, a high street clothes retailer completed the forms, all of the premises associated with the company would be described with the same Standard Industrial Code (SIC), including administrative offices as well as the outlets. In combination with PO boxes potentially being in the wrong place, offices can create the illusion of a great deal of jobs in retailing in a false location, leading to the possible creation of a "ghost" retail centre. Although these can be identified and weeded out there is the possibility that this issue will lead to problems in borderline cases of whether a town or retail centre is over or below a key level or not. The possibility is that real town centres will not be identified, because they are being made to appear less dense as a result of these problems.

The use of postcodes to produce surfaces can also impact upon whether a town centre is recognised as one by the Town Centres Project. If postcodes (and therefore by association town centred activity) are georeferenced to only one side of the road for example, the peaks of the surface will either be offset or the density will become diluted and may not register. This can happen in the case of terraced streets backing on to each other. One side of the road may be contained in a series of UPCs georeferenced away from the main street of a town centre, which would effectively deny those businesses inclusion in the density function.

There does not need to necessarily be a mistake in the data entry of the databases driving the surface production. Issues with database design or process of collecting information can have an impact (Chrisman, 1984). For example, in the ABI (one of the main sources of data for the Town Centres Project) a key question is that of primary activity. The problem lies in the fact that only one primary activity can be recorded for each organisation (not a problem for a sole trader, but potentially confusing for a multi-faceted organisation). With particular reference

to the Town Centres Project, and its use of the Annual Business Inquiry, the recorded data about the nature of business can be misleading. Although it is safe to say that the primary activity (or main occupation) of Sainsbury (for example) is supermarket retailing, this does not necessarily apply to all of Sainsbury's premises or employees. In the case of depots, head offices or petrol stations, the description "supermarket retailing" does not apply. Although the main use of those buildings is to facilitate supermarket retailing, it does not actually occur there.

The upshot of this particular kind of error is that "ghost" town centres can be produced. A supermarket head office will appear to a kernel or surface interpolator to be a centre of massive retailing employment (in fact it is, but not the kind we are looking for) and so will weight that part of the surface accordingly (Brewer, 2000, Brunsdon, 1991, Brunsdon, 1995, Diggle, 1985).

The third problem is the production of surfaces using the (already uncertain) UPC digital framework and the use of cut-off contours in these surfaces to create reporting boundaries of town centres / retail centres. Even if we had complete confidence in the surface produced from postcodes and input databases, the use of a standard key contour and standard kernel size is open to debate. It is not certain that a standard can be applied at a local or regional level that can truly serve to delimit all town centres, let alone a regional or national level. The problem is that town centres are not standard in terms of location, size, density, form or function and there is a serious question as to whether a universal cut-off point on a surface can be found.

Finally, it has been shown that linear features cutting through town centres can dilute density and as a result fail to represent areas that are clearly viable retail centres. A good example of this is the railway line that bisects West Hampstead.

6.2 Suggestions for a better approach to delimitation

It is clear that although both methods have their strengths, they also have their weaknesses. It is one of the objectives of this work to not only test the strengths of the methodologies, but to suggest alternative and potentially superior methodologies.

There are two ways of approaching delimitation in this case study and each method has its own governing philosophy. These philosophies can be described as:

i) ease and speedily produced of "on the fly" boundaries and

ii) more complicated, lengthier to produce, but more accurate boundaries.

In some cases it may well be that an easy, quicker boundary is perfectly adequate or accurate enough, but it may also be that, as in the case of some of the case study towns in this project, there are weaknesses in the method. The fuzziness and indeterminacy of urban boundaries has been discussed at length by geographers in recent years (Burrough, 1996, Campari, 1996). It would seem likely that the best option for quick and easy boundary production would be an updated version of the Town Centres Project, with additional processes that identified and accounted for linear features and the way that postcode geography affects the density of retailing.

As for the lengthier, more accurate method, Davies (1959) selects 7 of the 16 methodologies for delimiting Cape Town. If a check list was created of all the possible ways to delimit retailing centres, then in each case a tailored approach could be carried out, to take advantage of the particular data sources for that town. It would be my suggestion that this approach is adopted in order to produce the most appropriate boundaries by conducting a series of delimitation exercises resulting in a series of temporary boundaries. The final delimitation would be a weighted combination of those boundaries, with the weighting based on confidence in the individual method of production.

This could be done in a GIS environment, by a union of the overlaying polygons and creating centroids of the resulting sliver polygons. By then creating a convex hull of the centroids of the sliver polygons, a boundary that can be considered a combination of all of the boundaries can be produced.

6.3 Potential further research

6.3.1. Pattern recognition in retailing.

The scope of this potential work would involve the use of large commercial and / or governmental datasets – possibly the Goad dataset and / or records from a mobile telecommunications company, analysing movement and density of consumers through time in a town centre. It is a possibility that several existing datasets could be combined using some kind of spatial join as in recent work with regional spatial characterisation.

This research could take the form of observation of ten individual 24 hour periods a year for three years to give a good snapshot of the year. The sorts of phenomena to be investigated would be the difference between Christmas and June, or bank holidays or half-term and times within the day (location of customers at noon compared to midnight, for example).

In conjunction with work creating surfaces of information from historic datasets, such as the census of distribution, it is possible that this kind of research could provide useful insight into the dynamics of retailing by making use of existing datasets in an innovative way.

6.3.2 Updating the "Mobile consumer": Deciphering customer type from location and mobility

With the growing use and advances of spatially aware devices, we now have the ability to track large numbers of people and their movement through space automatically. This could be done with the aid of a mobile phone company or even by setting up a java-based environment in which the phone uses AGPS

(Assisted GPS) or GPS to report its location (either cell-based or grid based) to a server. By combining this with some kind of textual data, we can gain insight into the spatial and spatiotemporal characteristics of retailing consumption.

By making use of existing transport datasets, such as the tube or train usage figures, it is possible to create models of movement at a regional or sub-regional level. This has already been used to great effect in transport studies and for input into other models (Batty et al., 2003a) and this work would build on that to combine this data with information about sales and customer types. By using in-store tracking systems we can also perform this kind of correlation testing between sales and movement at a much smaller scale.

The intention and expected result of this work would be that by comparing movement, geodemographic and sales datasets, greater understanding of "trip-type", "customer-type" or even "store-type" could be attained.

6.3.3 Weather & Retailing

Forecasting weather and retailing patterns share some key aspects. Furthermore, it is likely that weather will affect the way we buy, what we buy, when and where we buy (Palutikof, 1983). The question is: to what extent can it be used to inform a predictive model?

Research has been focused on the effects of El Nino in the US on everything – retailing included (Changnon, 2003, 2004). Some cross research in terms of identifying seasonality of sales or consumption could be performed, using standard statistical methods to look at the causality of weather or climate patterns on retailing performance (Agnew & Palutikof, 1999; Subak et al, 2000).

6.3.4 Change in urban form.

The aim of this work would be to take advantage of historical data – digital or paper map based – to look at the changes in provision and structure. The Census of Distribution could well fit into this work and CASA is in a strong position, as it holds an almost complete set of Census of Distribution reports from 1951 – 1971. By modelling change through time we would gain insights into the change in retailing demand and supply over time, especially if the "missing years" (1971 to present) can be recreated using historical Goad data. The intention would be to produce a common digital spatial framework for reporting statistics that relate to retailing and consumption for historic data. Again this could possibly fit into a predictive model.

6.3.5 Representing time and space in terms of retailing interaction

Using a combination of mobile phone data and current digital and historical map sources to build better representations of interaction in time and space; it should be possible to build a complex model of spatio-temporal change. This work would build on solitary models (Raper et al, 1992), using surfaces of interaction for whole populations, perhaps using factor analysis or principal component analysis to create homogenous subsets of the data to model them.

It is expected that this work would investigate and create better visualisation techniques for describing movement in time and space, with special reference to the retailing environment. The secondary research interest would be what the relationship between environment and movement is. For example, does the environment (retailing or otherwise) impact on that movement and speed of movement in a meaningful and understandable way?

6.3.6. Clusters and territories of primary activities

It would be possible to use factor analysis and principal component analysis (PCA) to create homogenous natural groups within data sources (split all retailing in to 10 classes) then use convex hulls, kernel density estimation or key contours to create natural zones of business types. This research would propose to use techniques adapted from biological and ecological uses of GIS to model territories of business types. An example question would be what is the natural territory or territorial character of whitegoods sales, as opposed to fashion retailing?

6.3.7 Using cellular automata to model microscale retailing interaction

This work would take place in conjunction with some holder of a large (possibly retailing) dataset. The most useful dataset would be that of cell entry records for mobile phones from a mobile phone company. By using this mobile phone data as a trainer, it should be possible to create models of crowd movement, confined by the street geometry of a town centre to create models of retailing interaction.

6.3.8 Investigations into the association with London radial routes, town centres and the former "London villages"

As mentioned briefly in Chapter Two, the final surface produced by the Town Centres Project mirrors in many ways the radial routes out of London and also the structure of settlements. It is considered an accepted fact that throughout the world settlements develop in this way, along transport routes. This research would aim to correlate diverse historic and contemporary data sources regarding the development and structure of settlements of London.

Final Thoughts

It seems that there is the potential for a real step forward in the understanding and modelling of the retail environment. The datasets now exist in such volumes and in formats that can be exchanged and analysed with ease, coupled with advances in general in computing. There are changes afoot in the retailing sector with regard to confidentiality and the sharing of data, and the creation of the Demographic Users Group is evidence of this.

This has resulted in unprecedented cooperation between supposed rivals in retailing in terms of the sharing data and techniques.
There continues to be change in the economy at both a regional and national scale in the UK, moving away from manufacturing and primary industry towards a service based economy. As a result, both store-bound and online retailing is becoming a central part of the economy. This means that research and development in the sector is now both desirable and feasible. With these factors in mind, it seems that there is a promising future for research into British retailing geography.

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